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BUSINESS ADMINISTRATION

ITS MODELS IN WAR, STATECRAFT, AND SCIENCE

BY

EDW. D. JONES

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1914

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INTRODUCTION

Confident that administration of manufacturing and operating companies under modern conditions is developing into a new profession, Professor Jones has sought its scientific principles by a remarkable study of the older professions with which it is most closely allied. His argument is, briefly:

First—That success in dealing with men and affairs depends upon certain basic propositions and laws which can be discovered by studying the work of successful administrators;

Second—That the rules and methods followed by masters of business and finance are usually deliberately hidden, and there are no records throwing clear, full light on their lives and acts;

Third—That leaders in statecraft, war, and science, on the contrary, are figures of world interest whose careers and practice are illuminated fully and searchingly by public and private records, correspondence, personal reminiscences, and even petty gossip. From such data Professor Jones has analyzed definite primary principles of administration. In history and the biographies of military conquerors, diplomats, and scientists, he finds the elementary rules of success.

Close systematic study of scientific management has expended its first force on machines and processes. For its larger successes administration must work as great generals and statesmen have worked

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—with the human factor. It must work as great scientists have worked—with universal laws. Professor Jones advances no narrow specialized system, but searches the best thought of the world to bring its choicest fruit to the service of thinking workers in modern industry.

This attitude toward and this treatment of the subject indeed raise administration to the high plane of the professions among which Professor Jones contends it must be classed. And beyond this, the book now completed (the outgrowth of a much shorter study originally published serially in the pages of *The Engineering Magazine*) proves that industrial philosophy and practical doctrine may be set forth in English so luminous, by logic so triumphant, and with inspiration so uplifting, that they win the right to a place in pure literature and show that letters may be made a co-worker with science to the lasting advantage of mankind.

CHARLES BUXTON GOING.

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BUSINESS ADMINISTRATION

A NEW PROFESSION

CHAPTER I

THE RISE OF A NEW PROFESSION

IF we consider the industrial history of the United States, for the span of a long generation, dating backwards from this year of grace to about 1840, we can distinguish at least three great movements which have occupied the minds of men in industry.

THE AGE OF THE PIONEER

The first period was still engaged in the process of settling the country, as previous decades had been. In section after section of the newly-open West there was required that basic equipment which is the foundation of modern civilized life.

In 1840 Boston was not yet connected with Albany by rail, nor Albany with Buffalo.

The grain elevator had not yet been devised; and coke ovens did not yet exist in the Connellsville region. The first steamboat had just been seen at the Soo; and in Iowa they were plowing a furrow from the Mississippi river westward for one hundred miles, to guide the settlers. A few pioneers were beginning to pass over the Oregon trail; and Fremont was describing Utah in the papers. It was not until 1845 that copper was produced in Upper Michigan. It was only in 1852 that Chicago was connected with the East by railway. The locomotive did not reach the Missouri river until 1859, nor the Pacific coast until ten years later.

The mention of the pioneers calls for a word of tribute. Our nation's first industrial task was the stupendous one of clearing the farms, and of building the common roads, and of establishing villages and cities, and of opening outlets for the marketing of surplus products. Perhaps, indeed, the history of the pioneer is but "the short and simple annals of the poor." Carlyle dismissed America with the contemptuous summary, "Hitherto She but plows and hammers." To the settlers, plowing and hammering was the first necessity. But to the civilization of the en-

tire world the prompt and thorough occupation of the fairest portion of the American continent by a superior race, with European culture, was an achievement of the first importance. Nor was this work of the settler like the hopeless toil of the English agricultural laborer, or the cramped grind of the manufacturing towns of Scotland, with which Carlyle was familiar. The pioneers partook somewhat of the nature of the explorers. Their advance westward had much of the stirring quality of a military reconnaissance directed against the hostile forces of Nature entrenched in the wilderness. The victory was not to mere parsimony and patience, and the weaker economic virtues, but to industry animated with boldness, planning touched with imagination, and sacrifice sustained by a vision of a new State and a fairer civilization. The pioneers were rugged self-reliant men and busy contented women. Into the enjoyment of the fruits of their labors we have all of us entered.

THE AGE OF MECHANISM

The second industrial movement, of the period we are considering, centered upon the task of providing an adequate mechanical

equipment. Its characteristic achievement was to develop inanimate sources of power, and apply them in a thousand new ways to lift the burden of physical toil from human shoulders.

Accordingly, the second act transfers the scene of chief significance from the field to the factory. The first billet of Bessemer steel was produced in America in a little furnace at Wyandotte, near Detroit, in 1864. The first band-saw was brought from Paris to New York in 1869. The first middlings purifier, essential to the modern milling process, was built in Minneapolis in 1870. The twine-binder was invented in 1874. In the wonderful Centennial Year of 1876, there was given to the country the telephone, the incandescent light, the typewriter, and the first steel-frame building. In the middle years of the seventies the hermetical sealing and the refrigeration of fruits and meats was achieved, so that a great additional range was possible for the dietary of the nation.

Since those years, the American farmer has come into the possession of a well-nigh perfect equipment of agricultural implements. Our factories have been filled with machinery, our offices with appliances, and

our stores with furnishings, until it is generally conceded that no people of the world excel the Americans in the use of mechanical facilities.

THE AGE OF ADMINISTRATION

And now that these achievements are no longer in their origins, and that the issues called up by them are recognized as virtually settled, and as there is no longer any threatening opposition to try men's souls in the process of establishing and defending them, a third great industrial problem can be seen to emerge and become the center of interest. This is the question of business administration.

Upon this generation is laid the task of discovering, testing, and establishing in general use, those methods of organization and management by which the great productive agencies now within the possession of industry can be united, subjected to proper control, stimulated, guided, inspected, instructed, and rewarded, to the end that they may serve society with efficiency. In short, the dominant problem now is one of originating and formulating a science of administration, which shall comprise those basic principles

and practical policies required for the guidance of great affairs.

SELF-MADE MEN

This administrative phase of our industrial evolution has, of course, already a history of value; and this history is concerned with the doings of a very interesting generation of men. For years the United States, with its enormous domestic market, its ample capital, its freedom from tradition, and its colossal daring, has been perhaps the most favorable spot in the world for trying out new ideas of organization and management.

The executives who first took advantage of these conditions were, for the most part, self-made men. We often refer to the more noted of them as Captains of Industry. The majority were individuals of pronounced motor temperament, and endowed with exceptional talents; men capable of fighting their way upward and of gaining the advantage in a rough-and-ready struggle for the survival of the fittest.

These men seized leadership by right of ability but, technically speaking, they secured it as the perquisite or privilege arising from the ownership of great fortunes. They

lived in a day when men generally managed their own capital. In many cases they were the first to build up institutions of great size in the lines of industry with which they were connected. These circumstances involve the point that, had not these men accumulated private fortunes, they could not, individually, have become conspicuous as administrators. The price of their economic power was to make their activities bend to the getting of money. In other words, they had to create the kingdoms over which they later ruled.

Their policies were like those of most conquerors; direct, simple, and intensely personal. Living in a highly individualistic and self-confident society, they worked out rules of action, each man for himself. As the attention of a new community naturally centers strongly upon the process of growth, many of them were builders rather than administrators; more comfortable with tests of excellence which were physical rather than intellectual, private rather than social. As their communities had broken sharply with European traditions, and had as yet little applicable history of their own, they entertained a poor opinion of lessons drawn from the past. As they were devoted to little else than

industry, they saw few analogies between the administration of business affairs and the administration of other forms of social action.

Being so much in a world of their own creation, they looked upon the administration of industrial enterprises purely as a process of each man minding his own business. Their organizations were, therefore, mere extensions of themselves, usually bearing their names, and ruled as their households might be. Enterprises so conceived were incapable of serving as a rallying point for the loyalty of the various classes of persons who might become connected with them. The owner alone was fully energized. He carried staggering loads of responsibility, driving affairs forward by individual energy rather than by the true administrative process of evoking and guiding the energies of others.

Whatever reservations have to be made in praise, the courage and independence of these men must be recognized as splendid. They possessed a thorough mastery of details, as a result of the small beginnings from which they started. They had the ease and speed of decision due to technical mastery, and early imposed responsibility. They were

preserved from errors of theory by a wholesome and intimate sense of reality. The names of the leaders of this generation of giants will long remain household words in America.

The era of the Captains of Industry has been thus far marked by the lack of a sufficiently clear distinction between the necessities of the process of amassing a fortune, and the requirements of the principles of the true art of administration. We are so accustomed to measure mastership in industry by the tangible property which happens to remain in the hands of the executive, that it is difficult to perceive that there can be any such thing as an impersonal social standard, set by the intelligence of the age, and taking into account all the social costs and utilities associated with a man's actions.

If we turn to politics, we can see clearly enough that a man's record for efficiency, as the mayor of a city, does not depend upon his getting rich in office. Neither do we measure the skill of our military leaders by their strategy in gathering private booty, nor the capacity of our statesmen by the architecture of their private fortunes. In these cases we recognize the existence of an art or polity,

and we are able to judge the quality of the action itself, regardless of the personal reward which may have been received by the individual for his action.

This method of judging is now being introduced into industry, and it is bringing into view a new world of possible efficiencies. That we have not more generally used such a test, hitherto, is one of the reasons why broad and intellectually respectable principles have been so slow in gaining control of industrial action; and why it has been so difficult to detect the really capable administrators among the crowd of men who are merely, and perhaps even accidentally, rich.

NEW CONDITIONS

Since the ranks of the first generation of administrators have begun to be seriously thinned by death, a notable change has been taking place in the character of our industrial leadership, and in the conditions under which it is exercised. The growth of business into units embracing, under a single administration, hundreds and even thousands of stockholders and employees, and uniting many minds in operations which require long periods of time for their completion, call for

searching tests of performance, and exact and just methods of apportioning rewards, so that the wills of many persons can be brought into energetic concurrence.

The use of the corporate form of organization, by which the business unit is made the dependent creature of the State, coupled with the increasing sensitiveness of public opinion to the probity of the financing plans, and the humanity of the operative policies employed, unite to require a more skilful diplomacy, and methods which will bear public inspection.

These changes are transforming the business administrator from a mere owner of private property into a responsible agent, exercising delegated authority. They increase the element of trust or responsibility or service, for the measurement and valuation of which a new outfit of standards is urgently needed.

ADMINISTRATIVE HELPS

There are various helps destined to play an increasing *rôle* as the handmaids of the new administration. In the first place, the physical sciences are being applied in industrial operations in a new way. Formerly

thought of as the source of mechanism for supplementing or relieving the operative, they are now the source of agencies for supplementing and relieving the executive as well. They assist in the testing of materials, the refining of productive processes, the preservation of the operatives' health, the sharpening of technical standards, the separate measurement of the essential elements of performance, and the provision of new forces and instrumentalities generally.

A second class of aids includes greatly improved systems of accounting and cost accounting, and a rapidly developing theory of valuation, which concerns itself with the more subtle and immaterial forms of property. These are the administrator's chief instruments of precision, where problems of value rather than problems of physical processes or of human nature are concerned.

A third aid is the swiftly forming science of psychology which now enters, supplementing experience, dissolving the ancient antagonism between humanity and efficiency, and making it possible for industry to respond intelligently, and even profitably, to the demands of a more enlightened public conscience.

A fourth aid is what is commonly called "system": a somewhat indefinite mass of rules of procedure, together with appropriate equipments, relating particularly to office work, and representing the accumulated experience of innumerable official minds.

The first tentative synthesis of these various *hilfeswissenschaften* into a code of rules for the business executive is involved in the movement known as "scientific management." This manifestation of a new order of accurate and systematic thinking in industry, so significant of the times, took its rise as a philosophy of the shop, but has culminated in the enunciation of a group of principles constituting an encouraging earnest of a forthcoming more fully developed science of administration.

THE PROFESSIONAL ADMINISTRATOR

The large individual enterprises now required to meet society's need must work with the money of hundreds and even thousands of investors, so that individual or family domination, resting upon ownership, must decline as a system. Between the multitude of stock- and bond-holders constituting the proprietors, on the one side, and the still greater

multitude of employees, on the other, there is being created a central strategic position to be occupied by the professional administrator.

The occupant of this position will be the central pivot upon which a vast number of human relationships will turn. Upon these men will rest a sort of trusteeship to preserve the property intrusted to them, and a demand of leadership to guide and guard their employees. Upon them will also rest a general responsibility to the public to help this day to live its life, and this generation to make its contribution to progress. The whole situation conspires to create an opportunity for a new race of executives, which shall justly appreciate the various classes of responsibility resting upon it.

Wanted, therefore, a body of leaders for industry, who shall unite with native talent, trained and liberal minds: men who believe that the sea of affairs can be charted, and can be sailed by the aid of permanent worthy principles and a fine exact technique of diplomatic and humane methods, and who shall be as zealous for the ennoblement of their art as they are active for their own advancement.

TRANSITIONAL DIFFICULTIES

The new order always evolves out of the old with pain and misunderstanding. The new is long looked upon from the inadequate viewpoint of the old. The exigencies of the new situation are always upon us before the teachings of the old have been sufficiently deliberated upon to yield a reliable philosophy of action.

It is not surprising that this generation should be embarrassed, in the task of finding new maxims and ideals appropriate to its new conditions, while it is yet blinded by the brilliant achievements of the age of the Captains of Industry. The shadow of the great founder still falls upon the present-day executive in many forms. In one case it is a collection of conceptions and tests, once considered adequate, and a tradition of methods exalted by the prestige of many successes. In another, it is an incompetent heir, invested with an estate, and the glamor of a prominent name, and set, as an amateur, to rule over experts. Again, the shadow of the departing order takes the form of a vast enterprise which was, perhaps, originally builded with enthusiasm and many hopes to great size and power, but which is now a hollow shell con-

taining many a sheltered nook within, where weak men may vegetate as clerks, perpetually shirking responsibility by referring matters from one to another in an endless round of red tape, or where strong men are lulled by a sense of security to relax effort and trust to the defense of "the impulse of an early start," or to "interlocking directorates," or "banking control," or "dominating influence in the trade," or the repulsive tactics of "predatory competition," or to anything else than service.

Perhaps the chief hindrance to the development of administration in American industry, in the next few years, will prove to be what we may call the danger of the intrenched position. The significance of this danger was long ago pointed out by Machiavelli, who warned his ideal prince of the harm wrought by strong fortresses. His words, written about 1513, still represent human nature, and are full of significance. He said,

> Whenever either princes or republics are afraid lest their subjects should revolt, it results mainly from the hatred of the subjects on account of the bad treatment experienced from those who govern them; and this comes either from the belief that they can best be controlled by force, or from lack of sound judgment in governing them. And one of the things that induce the belief that they

can be controlled by force is the possession of fortresses with which to menace them; and thus the ill treatment that engenders hatred in the subjects arises in great measure from the fact that the prince or republic hold the fortresses which (if this be true) are therefore by far more injurious than useful. For, in the first instance, they cause you to be more violent and audacious towards your subjects; and next, they do not afford the security which you imagine.

And further he says:

A good and wise prince, desirous of maintaining that character, and to avoid giving the opportunity to his sons to become oppressive, will never build fortresses, so that they may place their reliance upon the good will of their subjects, and not upon the strength of citadels."

THE FUTURE SUPPLY

In this day of large and permanent undertakings industry cannot afford the risk of administrators who, being ignorant of principles, must govern by extempore decrees. Nor can it endure to educate those who will become wise only through the experience of disasters. Society is no longer satisfied to prepare its physicians and lawyers and engineers by an unregulated process of learning through experience. If administration is an intellectual pursuit, it is not sufficient to trust to such processes for administrators.

Furthermore, business experiences now

less than formerly offer themselves as an educational ladder, apt for the upward climbing of the growing mind. It is only in the world of small independent businesses that responsibility increases gradually and *pari passu* with ability. The typical captain of industry, of the recent past, advanced step by step. As his powers of mind and experience grew, his business increased. His responsibilities were enlarged by almost imperceptible increments. In the end he emerged, as a scholar might finish in a carefully graded school, having passed through a finely graduated scale of functions, extending from the simplest to the most difficult things. Business experience less and less offers this encouraging educational aspect of a series of functions in which each performance prepares for the next. Superior minds are as much wanted as ever, but they are wanted already grounded in those general principles which the last generation of leaders distilled only from a prolonged experience. Young men must now expect to enter some department of an organization which is already large, and expect to remain for long periods engaged in highly specialized functions. Such upward advances as they make are likely to

be by sudden leaps to new responsibilities, which test their latent talents to the utmost. Conditions of this order can best be mastered by those who first of all, by systematic preliminary study, attain a firm grasp upon basic administrative policies, and who then use practical experience to instruct them in the niceties of particular applications.

The late Mr. Dill once said that he could secure a million dollars ten times while he was finding a man with the capacity to administer the affairs representing a million dollars at work. One of the reasons which has been assigned for the excessive concentration of administrative control in American business is the small number of reliable executives. And this is also, doubtless, one of the reasons why we overload good men, and wear them out so rapidly. This dearth of administrators is not a dearth of bold and energetic men, but of men who are firmly grounded in general principles.

What natural processes fail to supply us must be produced by specific agencies, that is to say, by educational agencies. But to make education effective, knowledge must be reduced from empirical to systematic form, by establishing, in the world of the intellect,

those principles and policies which are to be mastered, so that training may form the mind of the executive more certainly, more rapidly, and more thoroughly than unregulated experience can do.

NEW CONCEPTIONS

Genius in leadership, as contrasted with talent, comes not in response to comfortable helps, nor reliable educational agencies, but is awakened in unexpected places by great issues. It comes, as if in response to a call, whenever new ideals take strong hold upon men. War produces capable generals. Intellectual conflict breeds seers and philosophers. Prophets arise to preach new gospels. It matters little that there are difficulties. "Truth," says Nietzsche, "does not find fewest champions when it is dangerous to speak it, but when it is dull." Industry insists upon efficiency, but efficiency may often be best insured indirectly, by setting forth that in industry which is inspiring, and which will most thoroughly awaken mind and heart.

The old ambition to build up big business units, and to accumulate great fortunes, is now no longer so fresh and full of zest as it once was. It does not get the response, and

call out the best men, as in the old dramatic, careless, buccaneering days. To simply repeat what the last generation did in the way of piling up fortunes, and to do it on the same intellectual and æsthetic and ethical plane, but without the novelty of being the first to do it, nor the excuse that first comes bread and then the higher things of life, and without even the freedom of action and the general applause of the days of *laissez faire,* is not to set forth a very moving aim. The hungry intelligence of industry is asking for great new objectives worthy of great efforts. It asks for tasks as noble for us now as the opening of the continent, or the building of the railroads were for a past generation. A new and larger conception of the function of industrial leadership is called for.

The great resources of the country, subdued by the pioneers, and the elaborate equipment provided by the engineers, combine to set the stage for a high statesmanship and for a fine diplomacy to begin to play their *rôle* in industry. Since it inherits so much physical equipment, the new generation can be less material in its aim, and give itself more largely to providing an intellectual equipment. As we live in a more advanced

stage of society, the thought of the administrator may be less of equipment than of policies governing operations, less of operations than of ultimate ends, less of his own part in those ends than of the harmony of the ends themselves with the constructive tendencies and aspirations of society. What is wanted for immediate guidance is a body of broad, permanent, and socially beneficent principles of industrial action, to which superior minds, forming an aristocracy in industrial affairs, may swear allegiance, and which they may carry forth, as on a crusade, to establish as realities in the world.

The administrator who is willing to take part in this movement will find himself, as were his ancestors, upon a frontier, with the opportunity opening before him, as it did before them, to become a pioneer. The frontier will not now be one of axe and plow, nor of engines and machinery, but of principles and policies, and ultimate aims, and final tests.

The administrative problems awaiting solution are almost innumerable. The executive who carries the scientific method into his work will find an opportunity to make more clear the conception of authority and respon-

sibility, and to formulate the rules of their distribution. He will study the co-ordination of mutually functioning agencies, and the means of their supervision. He will find need to determine more precisely the basis upon which rests the division of labor between administration and operation, and between principal matters and details. He will concern himself with the meaning and use of standards and sequences and schedules, and will attack the great problem of framing a theory of rewards and punishments adequately adjusted to the moral sense of the time. He will discover how, within the limits of established costs and market prices, the life of labor may be made, for the lowest necessary ranks of persons, a life of health and decency and mental growth. He will show how the resources of an industrial organization, assembled and operated primarily to produce certain goods or render certain services for the market, may be fully exploited for human welfare—fully and completely exploited for the first time—in uplifting and enriching the lives of the associated individuals, by serving them as an educational agency, as an expert consultive staff, as a joint buying power, as a recreation and consumption

group, and otherwise in many charming ways yet to be discovered by those who have faith.

THE FELLOWSHIP OF ADMINISTRATORS

What the military leader was in the ancient days of constant war, and the statesman in the period of the formation of great States, the industrial executive is in this commercial age. He is the leading exponent of organized action in the world. He should dignify his tasks, boldly conceiving them on the highest plane of which he is capable. He is the intellectual heir of all the various kinds of executives of the past, and there rests upon him the mandate not to disgrace the succession.

It is open to him to maintain a stimulating communion with his predecessors—with all the great military leaders and statesmen and diplomats whose history is preserved for us —and from their experience to gather principles of action. Why should not the business executive practice Cæsar's leniency, and his art of making common cause with his men, or endeavor whether Napoleon's celerity may not be used in the bloodless battles of economic service? Why should he not be stimulated by Richelieu's example to strive

for coolness of analysis, or be moved by Sir Philip Sidney's charm to practice the art of winning friends?

Brought into contact with the thoughts and deeds of great minds, the business executive need not feel alone in the smallest village, or the most distant engineering camp. He will find that before him the great company of the world's executives has had to deal with the same weaknesses of human nature as those against which he combats, and has relied upon the same virtues, and employed such methods of organization and administration, in bringing men to effective joint action, as are equally open to him. The field of his leadership may, indeed, be different from theirs, but the fundamental principles by which his action should be animated and controlled are largely the same.

Viewed thus, in proper relation to the history which is logically its own, the work of the business executive loses its isolated, sordid, and empirical character. It acquires a tradition, and multiplies the relations which knit it together with the other portions of society's organized effort. It gains a thousand new enthusiasms and sources of sig-

nificance, and becomes a promising foundation upon which to erect ideals of a professional character.

THE OUTLOOK

A previous age witnessed the Industrial Revolution, which introduced the machine, and through it worked the entire reconstruction of society. Now a second industrial revolution is in progress, which aims to lay a foundation of administrative principles underneath business practice, and which, if it succeeds, will inaugurate a new era of progress.

It lies within the power of this generation to end much of the drudgery and antagonism from which the operative classes suffer, by devising more just and flexible methods of partnership between the productive factors, and by harmonizing operative methods with the requirements of human nature. It will be possible also to unlock much of the energy of administrative circles, and of staff ranks, which is at present dormant because of the absence of professional pride and of objects worthy of profound enthusiasm. It will be possible to raise the general tone of industry by setting forth new ideals of efficiency, distributive justice and democracy.

THE ADMINISTRATOR AS A GENERAL

CHAPTER II

THE UTILITY OF THE STUDY OF HISTORY

THE art of administration is as old as the human race. Even the leading wolf of a pack is an administrator. Organization is older than history, for the earliest documents, such as the code of Hammurabi, show the evidences of many generations of systematized social life. The real pioneers are the unknown promoters of the stone age, and the system-makers of the bronze age. Long ago almost every conceivable experiment in organization was first made. The records of history tell us of large units and small ones, of great and slight differentiation of functions, of extreme division and extreme concentration of authority, of mild and severe sanctions, of appeal to system

and appeal to passion, of trust in numbers and trust in leadership. Of the vast variety of units of organization through which human intelligence has worked, and through which human purposes have been achieved, or thwarted, the greater part has passed away; and the names of them, even have been forgotten.

In politics, the evolution has passed through the horde, the patriarchal family, the clan, and the classical city State. Nations have tried despotisms, oligarchies and theocracies, absolute and constitutional monarchies, and republics. In military matters the phalanx gave way to the legion and cohort, and these, in turn, to the division, brigade, regiment, battalion, and company. Throughout history, the survival of the fittest, as between nations, has been fought out, in part, on the basis of the ability to use organized and co-operative methods of action. What a wealth of experience has been gained—and lost! How many times, in the long journey of history, have underlying administrative principles been, with enthusiasm, discovered,—and rediscovered!

And yet we seem to have accumulated but a small reserve stock of knowledge on this im-

portant subject. We are still eagerly searching for the most elementary principles of administration. With countless generations of experience, in the conduct of affairs, behind us, the individual business executive of today is feverishly trying to broaden and intensify his personal experience—to live fast and hard, so that, in the short span of his life, he may discover *de novo,* for himself, the principles and policies required in the government of the complicated economic organizations of the present day.

Since a knowledge of the principles of administration is now of so great importance, we should add to the agencies now being established for the study of current performance a provision for the systematic review of the history of administration. An analogy exists between the present needs of the American business executive, into whose hands in a generation a great increase in power has come, and the needs of the German army officers before the development of that splendid system which made Germany the leading military power of the world. A hint may, therefore, be gained from their experience. The Prussian General Staff and War College were organized to gather all

engineering, topographic, and other technical knowledge, which could be made of use in war. But, especially, there was entrusted to them the function of reviewing military history in a scientifically thorough manner, to obtain from it the maxims and principles which possess validity for future operations. In the hands of general historians, history is worthless for military guidance; but to Scharnhorst, von Clausewitz, von der Goltz, von Moltke, and the other students of the General Staff, is due the credit of having so sifted their facts, and so brought them to bear in the criticism of principles, that they have made them a firm foundation for the scientific conduct of war. Nor have they confined their attention to military affairs alone; the entire history of administration has been laid under tribute. The suggestion we would offer is that a similar study of administrative history should now be made in the interest of the business executive.

This study, to be fruitful, must be strictly scientific in its character. Many men of affairs are much prejudiced against the invasion of business by science and theory. They conceive of these things as something new and untried, and something opposed to

experience. A certain excuse for this view exists in the fact that the scientific method has, thus far since its discovery, been applied most prominently to facts which ordinary experience does not furnish, but which are attainable only through the somewhat rigid and refined methods of the laboratory. Many persons have concluded from this that the method can not be applied to the facts of ordinary experience.

Again, the results of science which have come forth from the laboratories, in the form of theories, have often presented themselves in the guise of something new and not previously heard of, and something requiring the most suspicious treatment before being admitted to any part in practical affairs. And so again, a conflict between new and old, between "theory" and "practice," has seemed to exist.

He would be a rash man, in this day of grace, who would deny that laboratory science has gloriously triumphed, and made contributions of incalculable worth to the advancement of the human race. This triumph is a demonstration of the efficiency of the scientific method. It certainly establishes a presumption that its application to bodies of

fact which arise outside the laboratory will also be attended by valuable results. It may be safely affirmed that the way by which a maximum utilization of experience can be attained is through the application of the scientific method. Only in the delicate scales of science can the complicated conditions of practical affairs be accurately weighed, and the various factors contributing to success or failure be disentangled and separately appraised. Through its careful method of study alone, can we be sure that the part which accident and favor have played has been reasonably allowed for. This much the application of science to the recording and measuring of current performance is now demonstrating. The riches of past experience still constitute a great unutilized opportunity for science to render service.

The fundamental bases upon which the scientific method rests are two. The first is that all parts of truth are in harmony with all other parts. If there is not a rational order in the world, the mind of man is incapable of understanding the universe in which it is placed. The second basis is that any truth possesses equal validity for every normally constituted mind. On these two

bases the scientific method proceeds. This method is not different in kind from the methods of ordinary observation and thinking; it rather differs from these in degree. Briefly characterized, it is an orderly, persistent, and thorough use of the mind. More fully stated, the scientific method is the analysis of problems into their elements; an extensive and thoroughly adequate collection of data; an exact and truthful classification of facts on the basis of their nature; such an arrangement and grouping of them as will best reveal agreements, differences, and concomitant variations between them; and the making of inferences, or the discovery of new facts, by means of induction, deduction, and analogy. The new truths, or inductions, are then subject to criticism and test in every possible way. The scientific method calls for the eradication of prejudice which may interfere with the just estimate of any facts; and it requires open-mindedness, or willingness to receive new facts at any time, and to make such revisions in conclusions as may be required.

This method is universal in its applicability. It can be set at work upon the organizations of which we find records in

history, as well as upon the fossil remains of organisms in the earth's strata. It can work upon data which are the product of the most haphazard, partial, or impassioned of experiences, as it can upon the exactly controlled processes of a laboratory experiment. The results obtained will, of course, depend upon the quality of the materials furnished to it, and upon the degree to which the material can be controlled to compel it to reveal its true nature completely and clearly.

When, now, we turn to the practical consideration of the study of the history of administration, various objections interpose themselves. For one thing, there is very little history of private business administration available. Many men prominent in industry and commerce, in the past, have left us no records. Some of them, no doubt, made their way by tact, or overmastering personal energy, in spite of defective administration; some have preferred darkness because their deeds were evil. Many excellent administrators have never formulated their ideas far enough, dressing away the incidents of time and place, to enable them to observe that there were permanent

principles underlying their actions. Competition has often spread a mantle of secrecy over the essential facts.

Some of these forces, which have repressed economic facts from the record of history, may be seen at work in America today. A generation of great leaders, which developed with the progress of the country's industry, and has come up from the day of small things to an exercise of power rivalling that of the rulers of kingdoms, is now passing off the stage of action. With rare exceptions, these men vanish away mute, leaving no autobiographies. Examine a British book list and you will find that every month some diplomat, or officer of state, or traveler, or colonial governor has, in the evening of life, set down whatever may be of permanent value in his experience, and published his reminiscences. In no country of the world have greater things been done, during the last generation, than in America; but our doers of them are inarticulate. Conscious enough that the tangible things they have wrought will quickly crumble, they yet fail to round out the purpose of life, and distill a final essence of principles and policies which might pos-

sess lasting utility. Their estates are scarcely distributed before the question, "How did they achieve their success?" is given up forever.

In this dilemma we may turn to the history of political and military institutions, and find ample materials for the study of administration. These lines of activity have swept together millions of people into single organizations, and have made the leaders the cynosures of innumerable eyes. If Crassus, at one time the richest man in Rome, is little more than a name to us, we know of his contemporary, Cæsar, the private life, the motives and methods, the hesitations and resolves. If there is but an odd book or two of colorless record of Mayer Bauer, the Napoleon of Finance of the latter half of the eighteenth century, and the founder of the house of Rothschild, we have of his contemporary, the Emperor Napoleon, an enormous literature, contributed to not only by the great men who either aided or opposed him, but by his valet and the palace ladies-in-waiting. Thus there has been insured, in certain departments of administration, at least, searching publicity, and an abundant record.

But another difficulty will doubtless be urged, namely, that industry is neither war nor politics, so that the study of the administrative methods used in those fields will not yield results which can be applied to the conduct of industry. The usages of common speech indicate, however, that we constantly observe the similarity between the forces and conditions in these fields of activity. We commonly speak of "captains of industry," of the "strategy" of great business, and of "tactics" and "campaigns," and "line" and "staff." Argument from analogy is one of the valid forms of reasoning. It is the method of homologous series, which rests upon the assumption that what is true of one set of circumstances is likely to be true, in some degree, of similar sets of circumstances. It fastens upon a resemblance between two sets of relations, by which each case is made to reveal more fully the nature of the other.

As a means of gaining insight, analogy has been used since the dawn of wisdom. In the Bible we find the deepest spiritual truths suggested by analogies from nature, and from the simple relations of the household and the crafts. In the parable of the

sower, we review the various types of human nature. By means of the porter, commanded to watch lest his lord, returning suddenly, find him sleeping, and by the man trying to serve two masters, we learn of surprise tests, and indefinite responsibility. In the case of the house divided against itself we see the evil of faction, and of departmental rivalries. In the piece of new cloth sewed onto an old garment, and the new wine put into old skins, we learn the law of harmonious co-ordination of agencies.

The strictness of an analogy depends upon the similarity of the subject matters involved. If we compare organizations for war and politics with those for industry, we shall find the conditions vital to administrative success markedly similar. There is the same human nature, with its equipment of physical and mental faculties. The same protection is required against carelessness, laziness, jealousy, fear, and selfishness; the same reliance can be placed upon generosity, intelligence, energy and loyalty. There are always the unchangeable factors of time, space, and the properties of matter and force, presenting themselves in different de-

grees of importance. Some of the factors change in their nature, though gradually; knowledge increases, and the state of the arts progresses; so also do the customs of society, and the moral standards which must be observed. For these changes allowance can be made, and should be made with the greatest care.

The peculiar value of analogy is that by it certain cases, in which relations are clear and conspicuous, are used to familiarize the mind with the nature of the relation, so that, when similar phenomena, differently grouped, are studied, we are able to detect the relationship, even though it be subtle and partly hidden in its new form. We know that when once a figure in a picture-puzzle has been pointed out it seems so prominent that we wonder how we could have previously overlooked it. One hears a note in a chord distinctly, when it has been previously sounded separately. So the analogy aids us by familiarizing us with the idea of the relationship for which we seek. When we know intimately the characteristic signs of a thing, we are able to detect its presence or absence confidently and readily.

The greatest body of valuable data on any particular subject is likely to be found where circumstances have made the element of performance, in which we are interested, of unusual importance, or where a force has triumphed over unusual opposition, or where a man of unusual capacity has obtained the authority and resources to do things. We should seek for the circumstances which have specially emphasized or stressed the thing we would study, for there the principles of which we are in search are so developed and magnified as to make their study easy. An administrator who desires to follow this rule will, for example, turn to military operations to observe how leadership has been exercised when responsibilities are terrifying, and the greatest resource of soul is required to make decisions. Or in diplomacy, he will find circumstances which emphasize harmony and balance of character, and respect for custom. If one would study preliminary preparation, he may examine Nansen's remarkable preparation for his journey in the Fram; if one desires to study economy of time he may advantageously begin with a city fire department. A knowledge of the

military manual of arms would be a suggestive preliminary to motion study, and an examination of the national mints would suggest methods of preventing waste.

In the study of the extreme case, the thing sought is presented distinctly and emphatically to the attention. And this is a great advantage, for all perceptions tend to fuse in the mind into a general impression, unless forcibly prevented by the expenditure of the energy necessary to effect their analysis and separate consideration.

This suggests the value, to the student of administration, of giving himself free range over the entire field of administration, not confining himself to industrial administration alone; for only by wide comparisons will he be able to select the type of cases which most clearly reveals to him the workings of the force he desires to study. The person who cuts himself off from subjects analogous to his own loses something of the force of the contrasts and similarities of the facts with which he deals. To refuse the comprehensive and flexible service of analogy is to rob oneself of much of the resource by which the probability, or improbability, of all forms of conclusions is established.

Chapter III

MILITARY HISTORY

MILITARY HISTORY divides itself broadly into great periods, in each of which certain definite ideals and enthusiasms have moved the minds of men, seeking embodiment in appropriate military units and authorities, and finding expression in characteristic movements of strategy and tactics. Let us briefly glance at the leading characteristics of some of these periods, with a view to suggesting analogies which have interest from their bearing upon the administration of industrial enterprises.

ROMAN ARMS

The Roman military unit was the legion of from 4,000 to 6,000 men, divided into ten cohorts. The strength of Roman arms lay in three things. The first of these was a careful selection of men from among such citizens as were practiced in arms. The second dependence was upon discipline. Warlike youths were accustomed to the use of arms as a recreation, so that it was said that their sports were battles without blood-

shed, and their battles bloody sports. The third point was the prompt adoption of all improvements suggested by the experience of foreign wars. The Roman legion was practically never defeated, so long as these three principles remained in force. The secret of its strength was the spirit of the men who, in their perfect discipline, expressed their glory in Rome, and their confidence in themselves.

The most brilliant achievements of this military instrument were attained by Cæsar, who aroused the devotion of his troops to the highest point by making common cause with them in the pursuit of valor. As Plutarch says, "He showed them that he did not heap up wealth from the wars for his own luxury, or the gratifying of his private pleasures, but that all he received was but a public fund laid by for the reward and encouragement of valor."

Defeat came to Roman arms only when numerous wars had made it necessary to sweep together heterogeneous classes, which did not feel the old confidence in each other, and to introduce barbarians who did not feel enthusiasm for Roman triumphs. Rome fell, furthermore, because it became a house

divided against itself. The civil wars made it no longer Rome for which the troops fought, but the triumph of a faction. The leaders of factions being disinclined to disband their armies, the civilian troops disappeared, and in their place came bands of paid professional fighters.

THE BYZANTINE EMPIRE

After the decline of Rome, the center of the world's military progress was, for seven or eight centuries, transferred to the Greek empire. Constantinople ruled elements of a much less homogeneous nature than Rome, in her prime, had depended upon. There was less loyalty to the central rule there, and far less liberty under it.

The decisive military fact of the East was, however, that Byzantium had to contend against overwhelming numerical superiority in its enemies. South of it, from the Indies to the Atlantic, was the Saracen empire, burning with the zeal of a new religion. To the east were the Seljuk Turks, while to the north were the Bulgarians, and the Slavonian and Hunic tribes.

Against such odds it was useless simply to match man for man. The military leaders of the empire were full of military

spirit, and took keen delight in war as a game; but they were the descendants of Ulysses, and they made of war a game of finesse and cleverness—in short, a war of wits. They had the greatest contempt for the reckless hard-hitters of the West who plunged into battle without ensuring to themselves every possible advantage. The strategists of the East, by their spying and bribes, by stirring up treason in the enemies' camp, by surprises, simulated retreats, and ambush, illustrated the saying of Bacon that stratagem is a weaker kind of policy, used by those who are not strong enough to win by fairer methods.

The Byzantine empire, weakened by the destruction of its patriotic middle classes, and robbed of the protection of buffer States through its own folly, was finished by the marauding expedition called the Fourth Crusade; and it broke into fragments.

MIDDLE AGES

When the Roman empire became a shadow, and the Church was the one remaining bond of Western Christendom, political rule in Europe was scattered into the hands of numerous feudal lords. Military operations were carried on then by small bands of

aristocratic mounted men in armor, who followed the banners of their over-lords through fealty. The Roman troops were originally infantry, but the mounted plundering hordes of eastern Germans and Hungarians had already, in later Roman times, forced some of the legions to mount, in order to gain in speed. For western Europe, the call to horse was given by the terrifying raids of the Vikings. Armor was necessary because of the introduction of the long bow and cross-bow, the pike, the two-handed sword, and the axe.

In armor and in the fortification of towns the defensive gained, during the Middle Ages, a temporary advantage over the offensive, with consequent disintegration into small military units. Armor and fortifications were, however, but negative measures, so that when the Viking raids became more frequent and extended, and were followed by permanent settlements, it became necessary to increase the power of the offensive, by combination into larger units. Loyalty to local lords gave way, therefore, to loyalty to the king. The royal armies, which, at first, were small shabby bands of mercenaries, received additions of

superior quality from the nobility. This movement toward concentration was hastened and completed by the introduction of firearms, which took away the superiority of the aristocratic professional fighter, and enabled the fortifications of castles and cities to be speedily battered down.

FREDERICK THE GREAT

The crowning example of a royal army, used as the personal weapon of a sovereign who united in his hands absolute political rule and the powers of a commander-in-chief, is the army of Frederick the Great. The way was prepared for this great Prussian genius by a thrifty father who built up an army and a treasury for him. As an administrator, the father stands in much the same relation to him that a Benjamin Franklin, expounding maxims of thrift, would bear to a dashing organizer like E. H. Harriman.

Frederick was an intensely active, highly capable, strong-willed and self-reliant commander. He concentrated all power in his own hands, reducing his ministers to clerical work, and his generals to the duties of personal lieutenants. Below him the Prussian

administration was a thing of stiff and mechanical obedience, lacking in initiative and individuality. Several of Frederick's military losses were due to the fact that he gave his generals such minute orders, and was so severe in case of disregard of instructions, that they did not dare to use their own judgment, when unforeseen conditions presented themselves. He personally foresaw and provided for everything; he inspected frequently and thoroughly, and his sharp eyes saw everything. His discipline was severe and knew neither gratitude nor resentment. His calculations were accurate and his plans were limited to what was possible. His movements, which were skillfully disguised, were rapid. So superior was Frederick to his opponents in strategy that they were obliged for safety to keep their troops in concentrated form, and dared not give themselves sufficient space for effective manœuvres. To him was due the invention of the oblique order, a system of concentrating upon one point in the enemy's line by means of attack at an angle. He was more capable in marching and manœuvre than in battle; more capable in battle than in siege. It was his

practice to follow success with vigorous pursuit, but in defeat, like Hannibal, he became only the more active and dangerous.

His great defect as an administrator lay in the fact that he dwarfed the growth of those below him, and so educated no talented corps to bear the political and military burdens of the State, when he should be obliged to lay them down. He apparently could do things only through himself. Having a supreme contempt for the capacities of most mortals, he had no mind to make experiments which might have changed his opinions. Although he knew, for many years, that his successor was to be a man without ability, he handed down to him a system which required a Frederick. We may say that he brilliantly administered a system which was badly organized.

After his death, the prestige of his name and deeds was so great that it was considered blasphemy to suggest that any change could improve the Prussian army. Its methods could, therefore, suffer no alteration, except a refinement of punctilios, such as drill and uniforms. This army which had gloriously finished the seven

years' war in 1763, against the united force of nearly the whole of the Continent, was utterly routed by hesitating and divided leadership when it met Napoleon at Jena, in 1806, twenty years after Frederick's death.

NAPOLEON

Napoleon and Frederick resemble one another, in many ways, as administrators. The aims of the two men were, however, entirely different. While Frederick was devoted wholly to the advancement of Prussia, identifying himself completely with his people, Napoleon desired power as a means of personal aggrandizement, and was at the bottom selfish and vain.

As military leaders the great difference between the two men lies in the fact that while Frederick's army was a small professional one of recruits hired whenever they could be secured, Napoleon had the leadership of civilian armies enormously larger than any ever before put in the field. The French Revolution awakened the passions of the common people of France so that, when the monarchs of Europe combined in an attempt to force royalty back upon them, they flocked in great numbers

to the national standards. These men were animated by a terrible intensity of spirit and purpose, and willingly met deprivations in the field. The officers dispensed with the camp luxuries characteristic of the other armies of Europe; and the men marched with light knapsacks, so that they surprised the world by their rapidity of movement. When, in the later Napoleonic campaigns, conscription took the place of volunteering, and a war of defense of a republic changed into one of offense for an empire, Napoleon knew how to arouse in the breasts of his men the love of glory as a mainspring of action.

The leading military principles of Napoleon were to seize the initiative by concentrating his forces from marching into fighting order as quickly as possible, and, having massed the troops as compactly as effective action would permit, to attack swiftly.

This attack must be made upon a portion only of the enemy's army, and the weight of one's whole force must be crowded in, so that at the point of action a decided superiority is attained. This theory of action he often explained to his generals. Moreau,

in conversation with Napoleon in 1799, remarked that it was always the greater numbers that won. To which Napoleon replied: "You are right. When, with inferior forces, I had a large army before me, I concentrated mine rapidly, and fell like lightning upon one of the enemy's wings and routed it. Then I took advantage of the confusion which this manœuvre never failed to produce in the opposing army to attack it on another point, but always with my whole force. Thus I beat it in detail, and the victory which was the result was always, as you see, the triumph of the larger over the lesser."

In one way Napoleon possessed a defect similar to that of Frederick. He provided no adequate staff to relieve himself of details. During his early years he made up for this lack by remarkable physical activity, but when still in early middle age his energies began to decline. He allowed himself ease and luxury, and showed an increasing dislike for the hardships of the field at a time when his enterprises were growing rapidly in size, and were passing into a serious stage. The lack of staff was not from inability to create the necessary

administrative machinery, and insure its efficient working, for he maintained a spy system which rivaled that of Cardinal Richelieu. It is more likely that his intense desire to stand alone, in order to receive all the credit for what was done, was the secret of his action.

This brings us to the chief defect of his character. Although undoubtedly the greatest military genius that ever lived, he overreached himself. This is shown in a single enterprise like the Russian campaign; but it is shown in his life as a whole. He could probably have accomplished the anomaly, with the mercurial French, of founding a personal dynasty upon the French Revolution which beheaded royalty and announced the rights of man; but when he attempted to remake the map of Europe he reckoned beyond his power. He realized that the armies of the Republic had been animated by a passion for liberty, equality and fraternity, but he could not understand that his aggressions upon other countries deprived his armies of this moral force, and implanted it in his enemies; and that no skill in strategy and tactics could long withstand it. He would not permit a group of great

administrators and military leaders to share his honors, and form around him a cabinet, which might have protected him against himself. And so he plunged forward, unadvised, and talking of his star and destiny, to his Waterloo.

MODERN CONDITIONS

The new features appearing in modern war are the vast increase in the size of armies and the deadly power of firearms. In preliminary mobilization the chief advantage to be gained is speed. To this end, and because the conditions of mobilization can be largely foreseen and controlled, the solution which is applied is detailed preliminary planning. Duties are carefully assigned to separate individuals, in such a manner as to effect the utmost speed, through a smooth co-ordination of movements, without overloading any one person.

The first great master of modern preliminary planning of mobilization was Von Moltke. In his description of the mobilization for the Franco-Prussian war of 1870-71, he thus criticizes the advance of the French army. "The regiments had marched out of quarters incomplete as to numbers, and

insufficiently equipped. Meanwhile the reserves called out to fill their place had choked the railway traffic; they crowded the depôts, and filled the railway stations. The progress to their destination was delayed, for it was often unknown at the railway stations where the regiments to which the reserves were to be sent were at the time encamped. When they at last joined, they were without the most necessary articles of equipment. The corps and divisions had no artillery or baggage, no ambulance, and only a very insufficient number of officers. No magazines had been established beforehand, and the troops were to depend on the fortresses. These were but ill-supplied, for in the assured expectation that the armies would be almost immediately sent on into the enemy's country, they had been neglected. In the same way the staff-officers had been provided with maps of Germany, but not of their own provinces.

"When the Emperor arrived at Metz, a week after the declaration of war, the regiments were not yet complete, and it was not even exactly known where whole divisions were at that time encamped. The Emperor ordered the troops to advance, but

his marshals declared that the condition of the troops made this impossible for the time being." And so, we may add, the effort to carry the war onto German territory failed.

The advance of the Prussian army is thus described by Von Moltke:

"The means of mobilizing the North German army had been reviewed year by year, in view of any changes in the military or political situation, by the Staff, in conjunction with the ministry of war. Every branch of the administration throughout the country had been kept informed of all it ought to know of these matters. The orders for marching, and travelling by rail or boat, were worked out for each division of the army, together with the most minute directions as to their different starting points, the day and hour of departure, the duration of the journey, the refreshment stations and place of destination. At the meeting-point cantonments were assigned to each corps and division, stores and magazines were established, and thus, when war was declared, it needed only the royal signature to set the entire apparatus in motion with undisturbed precision. There was nothing to be changed in the directions originally given; it sufficed

to carry out the plans prearranged and prepared.'"

In strategy, which includes the general movements of a campaign, preliminary planning is of course impossible. The distances separating the several divisions of a great army, the time which would be required to make voluminous reports to headquarters and to receive back detailed instructions, and the innumerable local conditions which cannot be adequately grasped by one at a distance, make it impossible that highly centralized control should exist.

Here the flexibility of the German army system is shown. In contrast to the rigid plan of mobilization imposed by central authority, when the campaign is once under way and changing and uncertain conditions have to be dealt with, the headquarters becomes responsible only for the general features of the plan of operations.

Authority immediately passes down the line to army commanders, and regimental and company officers, lodging as close as possible to the time, place, and agencies of specific action. The army then becomes, not a mechanism under the thumb of a single leader, but an organism with great liberty of action,

and corresponding responsibility resting upon the parts.

It is reputed that Von Moltke once said that nothing should be ordered which it was conceivable could be carried out by the proper officers without orders. Certain it is that the orders from headquarters in the Austrian and Franco-Prussian wars were very few in number, and composed of but a few sentences each. Passing from higher to lower units, orders from the leaders of separate armies, corps orders, and division orders, were, of course, progressively firmer and more detailed.

In the modern tactics of engagement, a similar rule as to the location of authority is followed. While each army headquarters retains sufficient control to insure harmony of plan, details of execution are intrusted largely to the officers on the field, and in direct command of the minor divisions of troops. The old ramrod drill movements of troops on the field of battle are no longer possible. Discipline is now interpreted broadly that each individual shall apply sound principles in every emergency, remaining as continuously in touch with authority as this will permit. The fear of

minor mistakes is as nothing, with modern military administrators, in comparison with the fear of crushing out the spirit and energy of troops and lower officers by unduly suppressing initiative.

All this manifestly calls for a superior class of executives of all ranks, adequately prepared for their duties. To provide such officers, Germany has perfected her War College and General Staff with every educational and scientific agency which human ingenuity can devise. To these institutions the flower of the regimental officers is drawn for training, and to assist in the solution of the problems upon which the Staff works. From these institutions they soon return to the regiments. A constant transfusion of talent is taking place between the regimental line and the General Staff. Thus is insured to the commander-in-chief a body of capable officers familiar with each element of service, and trained to intelligent co-ordination of efforts.

When shall the great affairs of a country's industry be administered with equal enlightenment with this business of destruction and bloodshed?

Chapter IV

ADMINISTRATIVE PRINCIPLES

IN comparing the administration of military and business affairs, I do not wish to create the impression that business should be run exactly as an army is commanded; much less to imply that a defense for anything harsh and brutal in business can be found in considering it as a kind of warfare. When Sherman once made a celebrated remark about what war was, he referred only to the immediate results, and not to the ultimate purpose. It may be said that the sufferings of a just war lead to the joys of a nobler peace, as the drudgery of industry leads to economic well-being. The nature of these activities is to purchase a desired good through suffering.

No doubt the harshness of the immediate purpose of one tinges its methods in a way wholly unjustified in the other. In one the tests of efficiency of the executive are few and irregular, inexact, and darkly confused by uncertain knowledge; but they are of

enormous importance, so that an early failure seldom permits a retrieval. Industry enjoys the advantage of frequently recurring, easily measured tests, so capable of classification that a gradual growth in responsibility is possible as individual capacity is proved. In the one case, costs are almost ignored; in the other, they are a large part of the essence of victory. In one the issues are striking, and naturally stir the soul of man; while in the other, insight of interpretation is needed to perceive that, under a prosaic exterior, the results are of the nature of life itself.

The purpose of comparing the two with respect to administrative procedure is to make each illuminate the real nature of the other, for each simply clothes in concrete forms the workings of general principles which are based upon the ways of human nature and the material world.

DECISION

War presents to us cases where the word of a commander-in-chief will mean the death of thousands of men in a few hours. So clearly does this show the harrowing anxiety which must rest upon the mind of the

military leader, that we can see, through this emphasized case, that it is doubt and anxiety which are the great enemies to be conquered by the executive who would assume responsibility. Napoleon said at St. Helena: "People rarely have an idea of the strength of soul it requires to deliver, after full reflection on its results, one of those great battles on which depends the fate of an army, or a country, or the possession of a throne. And," he added, "few generals are diligent in seeking battle, although without it no decisive results can be gained."

Great leaders have always shown facility in passing over the deadline which separates deliberation from action. Frederick the Great, in the earliest work assigned to him, in his twenty-third year, showed great power of making up his mind clearly and definitely. Wellington, in the most anxious weeks of his life at Brussels, showed a decision following so instantly upon perception, that his mind was unembarrassed and perfectly at ease. Cæsar is recorded to have hesitated at the point of decision only once, and then but for a few hours on the banks of the Rubicon; and this may have been to test his generals.

The executive must have the power to con-

centrate attention, to think things through to conclusion, and to master and exterminate doubt. Then, by act of will, he must decide; and show that his shoulders are broad enough to bear the responsibility. The first requisite in the executive, therefore, is the power of decision.

INITIATIVE

Decision insured, the next question is the proper time for it. There is much to be found in the literature of war in favor of taking the initiative, and forcing the opposition to a course of action which it might not otherwise have freely chosen. As we have seen, Napoleon's plan was to concentrate, and strike, before the enemy was prepared. Jomini, who first formulated Napoleon's practice into a system, says: "If the art of war consists in throwing the masses upon the decisive points, to do this it will be necessary to take the initiative. The attacking party knows what he is doing, and what he desires to do; and he leads his masses to the point where he desires to strike. He who awaits the attack is everywhere anticipated; the enemy fall with large force upon fractions of his force; he neither knows where

his adversary proposes to attack him, nor in what manner to repel him."

The party which takes the initiative can make specific preliminary preparation for what is next to happen; while the party which is on the defensive cannot do so. The initiative brings one to the decisive point under the moral headway of an affirmative state of mind, and with the consciousness of being committed. The cultivation of the initiative stimulates activity. As the late Professor James might have said, by acting as if one possessed courage, courage is produced.

It was the historian Livy who first observed what many a military writer has since repeated: "People's apprehensions are greater in proportion as things are unknown." The initiative lessens apprehension and makes the decision easy in two ways —it gives us other occupation than foreboding and it reveals in the true state of things a situation better than that imagined. Active initiative develops the habit of decision; and the results of it yield us the greatest variety of experience, not only of others, but of ourselves as well.

One of the chief advantages of the policy of taking the initiative is that it permits the

utilization of the strategic moment. The first operation which raised Napoleon to fame involved the strategic moment. He was besieging Mantua, and the Austrians, sending a relieving army south from the Tyrol, made the mistake of dividing it, sending a column on either side of Lake Garda. The lightning is not quicker than was Napoleon to seize the advantage offered him. He abandoned the siege of Mantua, and attacked first one and then the other of the separated armies, before they could unite, driving them with great loss back into the Tyrol. He who takes the initiative has, in a measure, the choice of the place, the time, and many of the circumstances of action.

PRELIMINARY PLANNING

Preliminary planning is a form of taking the initiative; it is distinguishable from it only by the length of time involved, and by the degree of probability that what is done will eventually apply. It co-ordinates itself perfectly with the policy of taking the initiative, for, as we have seen, only that can be specifically anticipated, and prepared for, which one himself initiates.

As the current power of an organization,

as of an individual, has a limit, preliminary preparation is a means of increasing force; for by it energy, or the results of energy, may be stored up, ready for concentrated delivery at the desired moment. It makes action more decisive by giving a sort of strength different from that of initiative; for it provides what cannot be prepared later, together with what can as well be prepared in advance.

The most scientific preparation now made for any form of human activity is probably that made for war by the German War Academy and the General Staff. The Academy admits young officers, on efficiency tests, and completes their military training. It covers not only the subject of war, in all its branches, but science and modern languages. Formal studies are supplemented by constant field exercises in collecting information, and in the solution of practical problems, and by exercise with "war games."

The Staff is recruited from the best men who pass through the Academy. Its functions are to gather information about all countries, to make topographical surveys, to test new arms, rations, and equipments, to standardize camp and supply methods, to

compile the official military history, to plan mobilization, and, generally, to serve as the inventing, organizing, and inspecting authority of the army.

The results of German wars show whether these agencies are efficient or not. In the case of the Austrian war of 1866, in fourteen days from the declaration of hostilities, Prussia was in possession of Hanover, Hesse-Cassel, and Saxony. In nineteen days the battle of Königgrätz, which decided the war, was fought. It was all over in seven weeks. Likewise in the war of 1870-71, although France confidently expected to invade Germany, she found herself in a few days fighting an invasion. The armies of France were promptly separated, and all the decisive work was over again in seven weeks. In that war the standardizations were so accurate on the German side, and the agencies of correlation were so adequate, that there was no failure of the center to keep in touch with the outposts. There was no failure of ammunition at a critical time, and cases were rare of troops suffering deprivation from lack of food or supplies.

These institutions are the embodiment of two comparatively simple, but exceedingly

fundamental, principles of efficiency. The first is vocational training for all persons placed in important positions; the second is the compilation of all useful knowledge which can be better gained in advance, by experts, through study, than later, by general executives, through action. These two institutions, so successful in making Germany the leading military nation of the world, could be duplicated by us, in America, as industrial institutions, for a tithe of the waste they would save, and would exercise the most beneficent effects upon the general welfare.

SUBORDINATION OF DETAIL

Military history has passed through the stage in which the affairs of a standard-sized army can be controlled in matters of detail, as well as in matters of general plan, by any one person, even though he be an all-around genius. Frederick's kingdom was of such small size that he could keep his fingers upon everything, even the daily culinary arrangements of the royal household. Napoleon, with matchless celerity in work, confessed that he fully controlled his affairs only in the short period of his prime. Occasionally a rare mind like that of Frederick or of Na-

poleon will show equal facility in the most extensive plans or in the minutest details, but most minds lack the force and flexibility to sustain fresh and vigorous action on so many planes. In war the day of piling up tasks in such an indiscriminate manner at headquarters that only a heaven-sent genius can insure success, passed when the Germans began the application of the principles of administration to military matters.

It is clear that for the lodging of any administrative function, and the resting of the corresponding responsibility, there must be a certain ideal point in the administrative hierarchy of any organization. This point is where the problem of keeping in touch with the specific details of the agencies of the action controlled is approximately equal in difficulty to the problem of keeping in touch with the general plan of which that action is a part. To move a function from this point towards headquarters is to lose touch with specific conditions; to move it closer to the agencies of performance is to lose touch with the general plan.

As organizations grow, one function after another should take its departure from headquarters and pass down the line of adminis-

tration, drawn to lower levels by the necessity of keeping in touch with local conditions. The definition of what constitutes detail for an officer, in a growing organization, expands. Headquarters gradually change from a directing into a co-ordinating agency.

From the point of view of a superior officer, this sifting of everything to its proper level is the problem of the subordination of detail. The man of capacity often errs by working with energy rather than intelligence; not seeing that efficiency does not mean alone to do a great deal, and do it well, but means also to be constantly engaged upon tasks of one's calibre. If an organization is not large enough to keep a man of talent at his maximum work, the permanent solution is not to allow the individual to add lower functions, and shade out the subordinate executives, but to use this surplus talent for attacking the most important difficulties which restrain growth, so that with the increase in the size of the organization there will come abundance of the proper kind of work.

It is undoubtedly a fact that very many organizations are in a state of being strangled by undue concentration of work at headquar-

ters, while the subordinate ranks are soldiering. The proper place for deliberation, and even leisure, is where the far-reaching decisions are being made.

From the point of view of the minor official, the proper division of administrative functions means dignifying him in the eyes of those over whom he is set. Stimulus comes from the opportunity to do a task large enough to arouse the interest; and efficiency, from the freedom to bring one's personality to bear in a manner harmonious with its nature. Well scattered responsibility sobers and settles a force of executives, and develops and seasons their talents; for individual character is not developed by imagining responsibility, but by actually carrying it.

In conclusion, it is good policy to push decentralization and discriminating deputizing somewhat ahead of the needs of the immediate situation, with a view to the advance preparation of those agencies which growth will require. The progress of an organization is largely due to the ambitious upward pressure of the ranks below. Judicious liberty will increase this pressure, and form a prime means of insuring the future.

DISCIPLINE

The preceding discussion may suggest the fear that freedom of individual action will destroy discipline. The object of discipline is concert of action. The efficiency of it depends upon developing in a body of men such confidence on the part of each individual that every other person will play his part, that expenditure of energy to make sure of this is saved, and the full force of each is free to be expended in doing his own work.

The amount of freedom which is compatible with discipline depends not only upon preliminary practice, and action made second nature, as in the drill of the parade ground, but it depends upon the quality of the human material involved. Upon this depends what will appeal, and so what means must be used to make harmony of action doubly secure.

On its lowest plane, discipline is a training of instinct which insures a step-by-step compliance with a series of acts, which are means to an unexplained end. On its highest plane, it is such enthusiasm for the end, that the full use of the powers of each individual, in choosing the wisest steps to attain it, may be depended upon. The great point is that

these different planes tend to be mutually exclusive; so that it is of the greatest moment to choose that form of discipline which best agrees with the nature of the circumstances, and of the end in view.

CONCENTRATION TO SECURE SUCCESS

An analogy is suggested between Napoleon's practice of concentrating the masses of his troops to attain superiority at the point of contact with the enemy, and similar policies in industrial affairs. This rule of attacking the opposition piecemeal, with one's full force, is described by Mr. F. W. Taylor in his "Shop Management." He says (p. 144): "It is of the utmost importance that the first combined application of time study, slide rules, instruction cards, functional foremanship, and a premium for a large daily task should prove a success, both for the workmen and for the company, and for this reason a simple class of work should be chosen for a start. The entire efforts of the new management should be centered on one point, and continued there until unqualified success has been attained." . . . "Thus," continued Napoleon, "I beat it in detail, and the victory which was the result was always,

as you see, the triumph of the larger over the lesser.''

Nor must the effect of success upon the spirit of resolve in the individual, and upon the *morale* of a group, be forgotten. To induce a body of human beings to exert their powers, in combined action, with some degree of completeness, the aims must be worthy, they must be joint aims, in which all share, the relation between the work of each and the realization of the aims must be clear, and there must be faith that success will be achieved.

It may be said that the more precarious the prospects of an organization are, the more essential it is that a series of successes should be achieved, even though it be composed of very small ones. The position of a captain of industry, who has but a slight hold upon the public through advertising, and who must deal with an unstable body of stockholders, is somewhat similar to the position of Wellington in Spain, who dared not run any avoidable risks for fear a defeat would cost him the support of the government at home.

THE ADMINISTRATOR AS A SCIENTIST

Chapter V

THE PIONEERS OF SCIENCE

THOUGHT and action should be closely connected in every sound program of life. It is true that they have been called opposite and even antagonistic forms of self-expression, as when Goethe said, "Thought expands, but lames; action animates, but narrows." The same idea, with poetical embellishments, appears when Hamlet says:

> Conscience does make cowards of us all;
> And thus the native hue of resolution
> Is sicklied o'er with the pale cast of thought,
> And enterprises of great pith and moment,
> With this regard, their currents turn awry,
> And lose the name of action.

These expressions emphasize the difficulty of maintaining a just balance between the

two things. But when neither is allowed to become unduly dominant, they exert upon each other a mutually developmental and mutually corrective influence. In reality, thought and action are different phases or stages of one complete act of self-expression.

Great men of action have usually been strong thinkers. Their action has been known because it has been performed in public; their thinking has been in private. In the few short months during which Julius Cæsar possessed supreme power at Rome, he introduced so many and such far-reaching and skilfully co-ordinated changes in the military, political, and religious administration of the Empire, as to make it morally certain that he had spent much time, during his Gallic campaigns, in deep thinking on future problems. The great administrator is able to unlimber and deploy his mental resources promptly, at the critical moment, because he has them well classified, and under good discipline. He acts with full energy because he has driven his mental processes through to a thoroughly established and firmly believed conclusion. This deep and firm conclusion may be said to give him the unanimous consent of all his faculties to the proposed ac-

tion—and thus he puts all of himself into what he does.

Administration as Thinking

If administration can be defined as the art of controlling the joint actions of a group of reasoning beings, by means of the systematic communication of certain thoughts and states of mind from one to another, it is obvious that it is chiefly a matter of mental labor. The root of the administrator's power is that he compels other men to think certain thoughts after him. He paralyzes their action in certain directions, not by orders,—that is, not fundamentally by orders,—but by compelling them to think shame and futility connected with those lines of conduct. He energizes them in other directions by making them think of opportunity, reward, happiness, and honor. The executive who can get only eye-service or hand-service, while the minds of his co-workers are alienated from him, is a failure. Administration is a thinking job. The heart of it is clear-cut, forceful thinking.

It is essential, therefore, that administrators, and such as aspire to be administrators, should inquire as to the principles of effi-

ciency in thinking. How is it that some men have managed to collect evidence on matters which have eluded the observation of others throughout all history? How have some men managed to express themselves so that no intelligent person can mistake their meaning, and so that others separated from them by time and distance have been able to build upon their work with perfect security of understanding? How have they attained to originality, not by flashes only, but uniformly? How have they contrived to make even failures teach them, so that failures have been transformed into installments of success?

Science as Thinking

If industry is the chief exponent of modern action, it is without question that science is the leading exponent of modern thought. What results may be expected for the human race when these two things shall work together harmoniously and intimately! Science has devised the most rigid known tests of validity, has perfected an accurate terminology for recording its results, and has given to its treasures the most systematic arrangement for revealing the significance of the

ideas. Science has devised the thought-sequences most efficient in investigation, and has discovered the most salutary safeguards and warnings for avoiding error. The history of science, therefore, offers a field of study rich in significance for the student of administration.

Business men think of science in various ways. To one it means, chiefly, laboratories full of complicated apparatus for delicate and accurate physical manipulations, and altogether too slow and expensive for use in commercial production. Another thinks of science as a system of text-books and teachers and teaching, having a place somewhere in high-school and university programs, to convince young people that things do not happen without a cause. Another is reminded of various striking results of research which, from time to time, have stirred popular imagination, such as the X-ray, or artificial rubies, or the idea of the progress of the solar system through the heavens. One may, perhaps, venture to say that the usual significance of science to the business executive is a more or less uncertain and impractical kind of investigation which, from time to time, hits upon a new raw material

of value, or devises a new process of physical manipulation, or a new instrument of precision, capable, with much modification, of being used in business. Without belittling any one of the above mentioned aspects, it can be emphatically asserted that the significance of science to the modern administrator lies overwhelmingly in its record of mental methods—in the light which it can throw upon the principles of efficient thinking.

Let us examine this history very briefly, looking at it from a special point of view. Let us consider it as a record of ways and means, or as a test of brains, rather than as a mass of results; trusting that if a few suggestions of value can be found, the reader may be induced to continue the study for himself, to the end that, in this study, he may find a means of developing the power of judging thought processes, as one, through shop training, develops the power of judging the fitness of physical processes.

The Problem of Origins

When we take up the history of science, a question of the first importance at once confronts us. What first started men to think in the accurate, searching fashion essential

to the construction of science? Can we, through the study of the origins of science, discover the conditions which must be provided, if we wish an individual, or an industry, or a neighborhood, to attain the efficiency of science in its productive activities?

The record of science covers only some seven hundred years of the six thousand or more of recorded history. In those centuries it concerns but a minute fraction of the human race then existing. It has, therefore, to do with a rare and exceptional kind of human activity. The history is strangely divided into two periods, with eighteen hundred years lying between. The first division of it is the story of the Greek mind, from 600 to 300 B. C., the second extends from the sixteenth century to the present time. We have, therefore, two origins to examine, and to bring into comparison.

The Science of Greece

In the seventh and sixth centuries B. C. that most keen-witted and audacious of ancient peoples, the Hellenes, founded many colonies, and spread themselves out so widely along the shores of the Mediterranean that, in maintaining intercourse, the arts of navi-

gation became considerably improved, and trade was enlarged and systematized. As a result of the enslavement of less powerful peoples, and of the accumulation of wealth in the chief cities, the upper classes were gradually relieved from the pressure of necessity, and given the leisure to think. Travel, and the exchange of reports concerning different countries and peoples, broadened the intellectual horizon of these favored city-dwellers; while the practice of making comparisons stimulated them to consider attentively points of similarity and difference. The contact with Egypt was particularly significant to them, for it revealed the surprising fact that an orderly history, completely under human control, and free from supernatural occurrences, had there been recorded during the ages when Greek mythology asserted that the world was overrun with gods and goddesses. This revelation produced a keen interest in travel, and in descriptions of the geography, manners, and customs of foreign countries. An attitude of suspicion was developed toward inherited beliefs, which finally led inquiring minds to make a clean sweep of legendary and traditional explanations of the universe, and to seek, by means

of observation and reasoning, to construct a new and more adequate explanation of nature, and of the forces governing conduct.

The wars which the Greek cities waged constantly among themselves compelled them to study human nature incessantly; while the ever-present uncertainty of fortune made talent and sound leadership highly prized, and emphasized the value of courage and strenuous activity. Whenever, as a result of class struggles, it happened that tyrants rose to power, amassed fortunes, and strove, by luxury and the lavish patronage of the arts, to make men forget their humble origins, the examples thus created served only to stir envy and arouse ambition. These successes of individuals furnished proof of the control man could exercise over destiny. In this dramatic and ever-changing life, conventional interpretations were continually breaking down. Inquiring minds were continually thrown upon their own resources, and taught to confront the unknown universe of forces around them with something of the same boldness and aggressiveness which men used in dealing with each other.

And so it happened that there arose, eventually, about 650 B. C., a man who, through

extensive travel and a long life as merchant, statesman, engineer, mathematician, and astronomer, gathered a rich store of knowledge. By somewhat systematizing his ideas, and persistently communicating them to others, this man became the father of science. Such was Thales. And so also, shortly after him, Anaximander, a subtle observer of analogies, and the first maker of maps, was led to set down in writing his observations on nature, and to bring into existence the first Greek manuscript on science.

The sixth century was like the seventh, still a period of origins. Pythagoras studied the length and pitch of musical strings, and formulated a somewhat mystical theory of numbers. Hecatæus was the first of a long line of writers to throw doubt upon the myths of history.

The fifth century saw the climax of Greek learning. In it Herodotus, the Father of History, carried forward the work of sifting tradition, while Thucydides, who followed him, tested with care the facts he used, and looked upon history in a very modern way, not as the story of gods and heroes, but as the record of natural forces and human passions. Heraclitus, who led the way in philo-

sophical criticism, groped vaguely toward the conception of a universal reign of law, while Democritus, his scholar, hit upon the theory of matter as composed of atoms in a state of ceaseless motion. To this age belongs, also, Hippocrates, the Father of Medicine, and the leader of a band of practitioners who, under the impulse of high professional ideals, were investigators as well, and in their writings were not ashamed to record their failures as well as their successes. The manuscripts left by these men upon the muscles and the joints, and upon medicines, diet, and specific diseases, form collectively the most systematic body of scientific knowledge bequeathed by Greece to later generations. These thinkers, and many others, adorned an age the central figure of which was Socrates, the bare-footed questioning sage of the market-places of Athens. This great and good man continually sought practice in the art of reasoning, debating quietly and candidly with all who would participate with him. With an ever-burning enthusiasm for truth and virtue, Socrates seized every occasion to teach those about him how to give words definite meanings, and how to make their concepts clear. He endeavored to train men in reasoning, be-

cause he believed that whoever could think clearly would ultimately arrive at a knowledge of the superiority of right actions.

The intellectual activities of Athens, at its best period, under Pericles, possessed a truly remarkable range. Everywhere knowledge and technical skill was in demand. Geography and astronomy, natural history and agriculture were studied, architecture and city planning were improved, physical culture was reduced to system, grammar and rhetoric had their origins, oratory was made an essential of a public career, and the art of war was given new rules. Science became the vogue with crowds of persons who demanded superficial learning as a social asset.

The fourth century was both an advance and a decline. In it Plato composed the famous Dialogs, in which he elaborated with poetical power the different phases of the teachings of Socrates. Toward the close of this century, Aristotle, the greatest mind of antiquity, and the one whom Dante has called, "The Master of Those Who Know," passed in review everything which had been done. Bringing philosophy and science together, he gave to them the most systematic form then possible. "The Aristotelian element in

thought and knowledge," says Sir Alex. Grant, "may, perhaps, be summed up as analytic insight; and this insight arises out of concentration of the mind upon the subject in hand, marshalling together all the facts and opinions attainable upon it, and dwelling on these, and scrutinizing and comparing them till a light flashes on the whole subject. Such is the procedure which may be learnt by imitation from Aristotle." Not only did Aristotle describe and practice induction, but he gave in his writings so perfect a description of deductive reasoning, that little of importance has since been added to it.

The fourth century, however, ignored the emphasis placed by Aristotle upon experience and observation. The great demand for popular knowledge led to the rise of a class of professional teachers, called Sophists, which preferred brilliant superficial generalization to the drudgery of examining facts. The Greek mind (always prone to sweeping conclusions and rhetorical embellishments), when it lost its simplicity and seriousness of purpose, soon entangled itself in the meshes of unprofitable metaphysical speculation. This was illustrated, after the middle of the

fourth century, by the disputes of the Stoics and Epicureans.

There were, however, other reasons why the light of science died out. With the rise of the Macedonian empire, the Greek cities lost their freedom, and with it their courage and independence of thinking. The great empire conquered by Alexander in the east opened opportunities for enterprising persons to make their fortunes as administrators, military leaders, or teachers. The more active individuals became scattered through these vast eastern domains, and lost the touch with each other which was necessary to continue the construction of a systematic body of knowledge. The Athenian schools were abandoned, and the nucleus of thinking was destroyed. With the founding of Alexandria, Athens lost her place as the leading intellectual city of the world.

Alexandrine Era

A word may be said to bridge the transition from ancient to modern science. It was in many ways fortunate that Alexander scattered Greek culture over Asia Minor and into Egypt, for by so doing he prepared the way for the Roman empire of the East. And,

furthermore, since Europe was soon to be made hostile to "pagan" learning, by the rise of Christianity, and to be thrown back into a primitive state of culture by the barbarian invasions, Alexander, by spreading what was known of mathematics and astronomy and medicine through eastern and southern countries, brought this knowledge to the attention of the keen Hebrew mind, and threw it in the way of the Mohammedan invaders. These races, prizing the precious heritage, carried it with them across northern Africa and into Spain, and preserved it during the Middle Ages, until the awakening of the sixteenth century permitted its introduction into Christian Europe.

The Middle Ages were absorbed in civilizing the barbarians. They were full of the turbulence incident to the establishing of governments. Their thought was dominated by tradition, as represented by the Church and the Holy Roman Empire. The doctrine of human depravity, drilled into studious minds by the Church, dampened the ardor of those gifted persons who might have led their age. They learned to look upon human nature and the natural world with contempt and despair, as the abiding places of evil.

Renaissance

The Middle Ages were brought to an end, and modern history was inaugurated, by a gradual increase in the restlessness and boldness of thinking. The fermentation of ideas became general with the dissemination of the knowledge carried into Europe by the returning crusaders. It was promoted by the political contests in which political rulers began to cast off the control of the church, and by which the rising spirit of nationality repudiated the idea of subordination to a universal empire. It made itself felt in everyday affairs when the merchants of the northern cities demanded freedom and protection for trade, and opposed experience to dogma in refuting the Church's condemnation of interest-taking. When thus the foundations of thought were already loosened, there came to Europe, in the fifteenth century, from the west, the news of the dramatic episodes of the geographical discoveries. All minds were thrilled. At the same time, there came from the east (brought with the scholars driven out when Constantinople fell into the hands of the Turks), the brave thoughts of the classical writers of Greece and Rome. Under this double spur, with the mysterious

new world beckoning men of action, and the no less mysterious treasures of the past beckoning men of scholarly inclination, the new spirit of freedom at last burst all restraining bonds. Liberated from narrow ideas, as from a prison, men dared again to look upon the world as a home given the human race to subdue and enjoy, and upon human nature as a thing with a noble history and inspiring possibilities.

To the generation which, at the close of the Middle Ages, was just emerging from a long bondage to priest and prince, to authority and dogma, the long-lost record of the ancient nations was a powerful tonic. This rediscovered learning displayed the full record of human heroism and achievement, for the first time, to the men of the Renaissance. It was a call to freedom; a demand for intellectual elbow-room; a reassertion of the right to think. It aroused in them a determination to emulate the past, and become the masters of their own destinies. The vast stretches of the newly-discovered continents, meantime, served as a fit stage for any magnificent drama the imagination could construct. These things gave to man a new dignity. They revealed the arts and sciences

as the beneficent handmaids of culture, and they affirmed that noble living was as much the bringing of the Kingdom of God on earth, as the laying up of treasures in Heaven. The new spirit created a human sentiment which destroyed old customs and created new ones. It issued in a transformed literature and a new architecture and art. By turning inquiry upon religious creeds, it brought on, at length, the Reformation and the Counter-reformation.

It is not surprising that an age which looked into everything with such fresh and fearless eyes, which realized that gunpowder had made a new equality among men, which in the spread of new ideas had a constant illustration of the value of the discovery of printing, and which saw new continents discovered, should have beheld the physical earth with a new respect, and have turned with a new attentiveness toward the study of nature's laws.

The Pioneers of Science

Scientific study was taken up where Ptolemy the astronomer, and Galen the physician, and Archimedes the mechanic had left it. The collecting of manuscripts was re-

sumed where the scholars of Alexandria had dropped it when their great library was burned in 640 A. D. The experiments in chemistry were resumed where the alchemists had abandoned them in their fruitless search for gold. In the sciences having to do with human conduct, Machiavelli sought for rules of government in the writings of Livy. Grotius resumed the work of the Roman jurists, as did also Vico, when he asked why there was not a science of history analogous to the science of nature.

The events which led to the re-inauguration of scientific study by no means made it safe or easy; they simply aroused certain courageous souls to brave the difficulties lying in the way. One of these difficulties was the mixture of good and evil in the liberating movement itself. All reforms suffer from those who destroy balance and proportion by excess, as well as from those who destroy it by deficiency. The Renaissance in many ways discredited itself. It not only revived the knowledge of pagan nations, but it brought into practice again many of their vices and brutalities. It soon produced, also, a group of servile imitators of the ancient writers who, like the Greek sophists, smoth-

ered learning in pedantry, and offered to the hungry intelligence of the age a spurious product, elegant but inane.

Another hindrance to science, which was much increased by this weakness, was the perplexity of mind and anguish of soul into which all were plunged who had the temerity to move on, in their thinking, in advance of their times. The legend of Faust typifies the struggle of those pioneers of science who alternated between hours of passionate aspiration after truth, and periods of conscience-stricken doubt as to the sanity and morality of their own actions in defying constituted authority. When chemistry was yet alchemy, and astronomy had not yet distinguished itself from astrology, to possess unusual knowledge of nature, or to be able to do things not easily explained, meant, to the majority of men, to be in criminal league with the powers of darkness. The mixture of fear and scorn in which the pioneers of science were held prolonged and intensified the mental struggles through which they were called to pass; for no man can entirely resist viewing himself in the light in which he is conscious that the community in general considers him.

But there were other dangers of a more palpable nature threatening the pioneers of independent thinking. So long as the new movement of ideas concerned itself with literature and the arts, with manuscripts and manners, the conservative forces of society looked upon it with indulgence, and even with sympathy. But when it began to question the earth's primacy among the heavenly bodies, and so indirectly to attack the idea that the earth is the chief concern of the Deity; and when it began to announce, as facts, matters which could not be harmonized with the account of creation given in Genesis, the revolutionary nature of the new inquiries was perceived by princes spiritual and temporal, and preparations were made to stop them. The ecclesiastical hierarchy and the Inquisition, backed as they were in most countries by the political authorities, possessed the power to make a man a moral leper in his community, by pronouncing him a heretic, and to thrust his works into despised oblivion by means of the Index Expurgatorius. And, if these means were not sufficient, there were the rack, the prison, and the stake, as the ultimate weapons. The Renaissance began as a spring-time of joyous awakening,

but it brought at last not peace but a sword, and employed it in persecution as well as in warfare.

And so we find a record of heroism—the usual price paid for a precious liberty. Roger Bacon, a man born long out of time, spent twenty-five years of his life in prison, to atone for his researches in chemistry. Copernicus, the Polish priest-astronomer, forbidden to speak in public upon science, hid his discoveries for thirty-six years, fearing the charge of heresy. Only upon his deathbed did he see a copy of the book, in the preparation of which his life had been spent. Bruno was burned at the stake in Rome, in the year 1600, for his views of nature. It was not until 1611 that the last man was burned on English soil for independent thinking. Galileo was compelled, by threat of the rack, to recant; and was kept, during the latter part of his life, in seclusion and semi-imprisonment. Grotius, the father of international law, was condemned to life imprisonment. He escaped his jailors only through the strategy of his wife, who smuggled him out in a box of books. Lavoisier was guillotined in 1794 by a government which said it had no use for scientists. And in the same

year, Priestley was driven by persecution from England to America.

To the age of the pioneers belong, in astronomy, Copernicus, who asserted that the sun and not the earth is the center of the solar system; Tycho Brahe, the eccentric Danish nobleman who, with royal patronage, inaugurated modern observatory methods on a grand scale; Kepler, who had the patience to test his brilliant theories by years of mathematical drudgery; and Galileo, who mapped the heavens with a telescope which would now excite the ridicule of a county fair. In physics and chemistry, the pioneers include Paracelsus, the physician-scientist, who in youth wandered over Europe in search of knowledge, and in old age in search of bread and protection; Becher, the discoverer of boracic acid; Boyle, half alchemist, half chemist, the first Englishman to follow Bacon's method; Hooke, pupil of Boyle, who enunciated the undulatory theory of light, and almost anticipated Newton's discovery of universal gravitation; and Priestley who, with apparatus made of wash-tubs and kitchen utensils, discovered oxygen, and isolated more gases than all his predecessors put together.

In the sciences having to do with human behavior, new pathways were opened somewhat later than in the case of the physical sciences. Machiavelli made an unrivaled analysis of the art of the political despot, but so isolated politics from ethics as to earn almost universal condemnation. Bodin became the first modern to rival Aristotle in the study of government. Locke began again the analysis of human consciousness. Montesquieu definitely transferred the idea of law from the natural to the social sciences, by revealing political institutions as the natural products of the conditions of each country. Adam Smith traced the workings of the force of self-interest in the general economic movements of society, and produced a book which changed the policies of nations. Beccaria showed the futility of the barbarous punishments of his day, which rested on ignorance of human nature.

Requisites of Creative Thinking

Let us for a moment, in conclusion, summarize the significance of these two great beginnings in science—the origin in Greece, and the re-awakening in western Europe. Among the elements in the story which have acted

as encouragements to thinking, we find leisure, courage, a dramatic break with the past, alluring opportunity, and sound ethical motives. Two things may, perhaps, be selected as basic in setting the human mind at its best work: striking events to shake the force of tradition, and brave men fit to play the *rôle* of pioneers. The administrator who would revolutionize the methods of his organization, must, therefore, break the force of the mental inertia expressed by the well-known phrase, "It has always been done that way here"; and he must so generously share opportunities as to enlist the interest and fire the imagination of his men. Having done this, it remains to discover the minds of inquisitive and courageous nature, which reveal themselves in response to the conditions, and to give to such gifted individuals special encouragement.

Chapter VI

SYSTEM-MAKERS OF SCIENCE

THE age of the pioneers, in any province of science, is normally succeeded by that of the systematizers. System involves the ordering of details in conformity to a general plan. A general plan of necessity rests upon general concepts or principles, derived from the study of groups of specific facts. When, therefore, the period of systematization comes in scientific thinking, there appear in most conspicuous form those special bugbears of the practical man, namely, theories and theorizers. As the work of fact collection proceeds in any branch of science, and the amount of knowledge on any group of subjects becomes at length considerable, an unwieldiness or confusion manifests itself, owing to the lack of comprehensive conceptions and basic principles, by which the general drift and bearing of the innumerable specific facts may be grasped. In short, the woods cannot be seen for the trees. The suggestion then comes quite naturally that, as small collections of facts have permitted minor principles and local and lim-

ited tendencies to be fixed, so, if facts can be compared in larger bodies, group with group and class with class, general laws and tendencies will be discovered.

To the scientist, a law or principle is the description of a tendency or general characteristic of a series of facts. It is an account of sequences which tend, from the nature of things, to be self-enforcing. It has been defined as, "A description in the simplest possible terms of the widest possible range of phenomena." In all forms of mental work the use of principles and types is indispensable. The beginning of reasoning is to attain a conception of general facts, such as a law or a system of laws, to begin the process of grouping general facts into conveniently handled types or standards, and to form the habit of judging specific instances by comparing them with the standards.

The advantage of this habit lies in its economy of effort. William James has said:

> The best possible sort of system into which to weave an object, mentally, is a *rational* system, or what is called a "science." Place the thing in its pigeon-hole in a classificatory series; explain it logically by its causes, and deduce from it its necessary effects; find out of what natural law it is an instance—and you then know it in the best of all possible ways. A "science" is thus the greatest of labor-sav-

ing contrivances. It relieves the memory of an immense number of details, replacing, as it does, merely contiguous associations by the logical ones of identity, similarity, or analogy. If you know a "law," you may discharge your memory of masses of particular instances, for the law will reproduce them for you whenever you require them.

The person who thinks over his experiences, and deduces principles from them, soon raises himself, therefore, above dependence upon mere retentive memory. Such a man does not need to crowd his mind with specific instances, to be protected from the danger of going against the teachings of experience, for in his principles he has the concentrated extract of experience. His mind is liberated from timid subserviency to tradition or precedent, for it has the guidance of a deeper and surer rule.

The work of bringing together the detached results of isolated observers, and of submitting them to systematic arrangement and comparison, became a somewhat notable tendency in the natural sciences, in the latter part of the eighteenth century and the first part of the nineteenth. It centered first upon the mathematical sciences and later upon the biological group.

It was the work of the system-makers to articulate the frame-work of those sciences

which were sufficiently advanced to permit it, and to make comprehensible the bearing of each section or subdivision of knowledge upon the others. By thus bringing parts of sciences and families of sciences into comparison, many apparent contradictions have been explained. The light afforded by discoveries in one subject has served to illuminate the dark places of neighboring subjects. The very endeavor to make a comprehensive survey revealed the fact that certain important subjects had been overlooked and unstudied. The comparison of ways of working caused simplification and standardization. It insured also the application of each method to all investigations for which it is the best, regardless of the kind of work in which the method itself originated. Standardization of methods immensely decreased cost, improved instruction, and facilitated the comprehension, comparison, and final proof of results.

An example of the good effect of carrying the data of one science into the field of another is afforded by the history of spectrum analysis. Not only did the minerals furnished by the chemist, and given a characteristic spectrum by the physicist, enable the as-

tronomer to show that the stars are made of the same substances as the earth, but the unexplained lines in the spectrum of the stars suggested to the chemist the existence of unknown minerals. Another illustration is the theory of geology, as stated by Hutton and completed by Lyell; namely, that the earth's surface has been brought to its present condition through the operation of no other forces than those now existing. When this conclusion was brought to the attention of biologists, it cast doubt upon the accepted belief that each species of animal and plant was the result of a special act of creation. If all unusual and cataclysmic processes, and all special acts of creation, were found to be unnecessary in accounting for inorganic forms, such as the continents and seas, it seemed irrational to rely upon them in accounting for organic forms. This doubt redoubled the energy of the search for a simple and natural process which could be considered adequate to explain the existence of the variety of extinct and existing forms of life on the earth. The search resulted in the Darwinian theory of evolution. This theory, in its construction, beautifully illustrates the value of carrying ideas from one science to another,

for it is composed of elements brought from many different sources. The original conception of an all-inclusive process of evolutionary change came from philosophy, the theory that this change was caused by the normal exercise of forces now existing was transferred from geology, the observation of spontaneous variation was first made by the animal breeders of England, and the conception of a struggle for existence, involving the destruction of the unfit, was found by Darwin in the economic writings of Robert Malthus.

Leaders in Scientific Theory

We can mention but a few names among the many which hold an honorable place in the history of scientific system-making. A man of the very highest genius was Laplace, frequently called the Newton of France. He was an important connecting link in astronomy. On the one hand he closed a chapter of research by his contributions to celestial mechanics, and on the other, he opened a new lead with his nebular hypothesis, which announced a general process of change in the universe. In geology the first to correlate the mass of observations of rocks was the Scotchman, James Hutton. He arranged his

facts into a luminous and coherent theory, in which the process of deposition of rocks on the sea bottom, of elevation and folding to form the land masses, and of wearing down by atmospheric agencies, all found their logical places.

Turning to the biological sciences, we find five systematizers whose work is closely linked together. The first is Linnæus, the namer or Adam of science, and undoubtedly the greatest natural classifier that science has ever known. It has been said that he found biology a chaos and left it a cosmos. He did so by introducing the idea of a stairway or scale of nature, composed of a succession of living forms arranged in a single series of steps of ascending complexity. This system of classification was perfected by Lamarck who, however, based the arrangement of genera and species not upon superficial characteristics, but upon organic structure. He formulated a number of laws of organic change, which will bear study by the administrator. One of these became famous, namely, that evolution proceeds through the inheritance of acquired characteristics. It was the work of Cuvier to show that organisms could not be considered as related to each

other in a single series, but that they must be conceived as diverging from certain primitive types, as the branches of a tree spread out from the trunk. Finally Darwin, whose theory has already been mentioned, supplanted the Lamarckian theory, by showing that organic evolution is not caused by the inheritance of acquired characteristics, but is the result of spontaneous variation, and of a struggle for existence in which the fittest types alone survive. The last great step in the elaboration of the doctrine of evolution was taken by Herbert Spencer. The central idea of his comprehensive system is the application of this law to the mind of man, and to the phenomena of human society. In working out this idea, Spencer became the first to attempt a strictly inductive or scientific system of philosophy.

Exploded Theories

The system-makers have had difficulties to overcome as truly as the pioneers. It has been their task to build an insecure structure of hypotheses out from the known toward the unknown, like bridge-builders who could not know what the span was to be until the farther pier was reached. When their hy-

potheses failed to be confirmed as principles, and their systems fell in ruins, they earned the title of "nature-philosophers"; a phrase intended to exclude them entirely from the brotherhood of scientists. And even when their work was sound, and later confirmed, they often received the grudging recognition of the word "premature."

The favorite gibe of outsiders against science is "exploded theories"; as if the retort "obsolete methods" were not at hand. With every wreck of a theory there arise those critics, so wise after the event, who timidly shudder at the hazard of error in speculation, but without showing how the work of science (or any other great work in the world), can go on, except with the free and bold use of tentative conclusions. As a matter of fact, most "exploded theories" have been useful in their time. A theory does not need to be the ultimate truth to be of value. It is helpful if it substitutes a conception more like the truth than that which it has displaced, for by so doing it facilitates the transition to the truth, making the individual steps toward it shorter and easier. The human mind does not leap to the greater truths at a single bound, but

builds up to them by degrees, as the increase of knowledge permits, reaching them by a series of approximations, or through a process of corrections. "Erroneous observations," said Darwin, "are in the highest degree injurious to the progress of science, since they often persist for a long time. But erroneous theories, when they are supported by facts, do little harm, since every one takes a healthy pleasure in proving their falsity." The history of science amply proves that even when the scaffolding of theory has been inadequate, and has been torn down, it has usually served in its day to advance the construction of the permanent edifice of truth.

Theories in Practical Affairs

The place and function of theory has thus been defined by Mr. E. Ray Lankester, in his description of the scientific method:

> First, accuracy in the observation and statement of a fact and, secondly, the formation of often far-reaching guesses in explanation of the fact, suggested by a knowledge of other well-ascertained facts; [third] the guess being then tested, and so either established or discarded by means of experiment, or by further observation, or by logical reference to ascertained facts.

It is a very widespread opinion that practical reasoning differs from scientific reason-

ing chiefly in the second step of Prof. Lankester's definition; that is to say, in the use of "guesses" or of theories or hypotheses. There is, however, much ground for saying that it is precisely at this point that the greatest similarity between the two kinds of reasoning lies. The true difference is to be found in the first and third steps, namely, in the accuracy and completeness as to facts, and in the care with which conclusions are tested before being accepted.

Theories are probably as plentiful in practical affairs as they are in science. The difference in the use is that men of affairs (if they have not had scientific training) use theories for the most part unconsciously, and distinguish them imperfectly from matters of established fact. This carelessness keeps alive a crop of natural fallacies which, though periodically slaughtered on the field of scientific debate, springs up afresh in the minds of every new generation. It keeps afloat, also, a sort of scientific wreckage composed of survivals of old systems of thought, now abandoned by contemporary thinkers; and fragments of scientific views, misunderstood because popularized apart from their proper interpreting accompaniments.

As an example of an unconscious theory at work, we may point to the starvation of administrative and service departments of industrial organizations, by reason of the influence of the unfortunate phrase, "unproductive expenditure." The natural fallacy may be illustrated by the idea that invention will be promoted by concentrating capable men upon the particular process or mechanism to be improved, rather than by increasing the range and variety of study, so as to bring about a cross-fertilization of ideas. An example of a theory torn out of its natural place, and misapplied, is the idea that since, in the days of small owner-managers, the chief executives represented capital interests exclusively, such a policy is suitable for large-scale enterprises of the present day, with absentee stockholders, staff-consciousness, organized labor, and active public control. Incongruous elements may be seen joined together in the speech of those who, at one time, speak of the economy of high wages, and at another, of protection to equalize labor costs. Obsolete issues may be found doing duty in establishments where the continual thought is equipment rather than men; as if we were still in the seventies,

with poor mechanism and splendid men, instead of being in a time of splendid equipment, but unawakened and inefficient operatives. Men of affairs often ridicule science because of their own poor success with theories, although it is precisely in science that theories are used with intelligence and made to yield efficient results.

Theories are indispensable tools of systematic thinking, and are therefore essential to efficient action under the complicated conditions of modern industry. The slow-moving pedestrian may be able to make some progress by creeping along, with lantern in hand, lighting the road a few steps at a time; but the automobile driver requires powerful lamps. Small bodies can turn quickly, but where large momentum is involved the road must be seen far in advance to allow for obstacles. By means of these analogies we may approach a rule of administration, namely, the more rapidly affairs move, and the greater the interests involved in single transactions, the greater is the need for theories of action deduced from specific facts, and for such a calculus of probabilities as hypotheses alone afford. Theories are dangerous, of course—all complex, highly-pro-

ductive agencies are so. They must be formed and applied by men of trained intelligence.

Those great business executives who become specially noted as leaders of men are usually men of imagination or, as the phrase goes, of "large ideas." A theory opens the road in advance of action, and in so doing quickens and intensifies action. To arouse men to exert themselves, a view or belief is needed which absorbs the past into the present event, and projects both into the future, forming a program or course of conduct. The first event gains in significance as it leads to something else; and this, in turn, is illuminated by the charm of a still more remote good. Thus a vista is opened,—a way of life,—along which progress seems worth while. And so men are awakened, and their energies unlocked. "Even false views of things," said Cardinal Newman, "have more influence, and inspire more respect than no views at all. Men who fancy they see what is not are more energetic, and make their way better than those who see nothing." Certainly those men are best able to evoke the enthusiasm and support of others who can present far-reaching and significant ideas,—

ideas which touch upon and illuminate many things with a new significance, and which fire the imagination by their implications and consequences.

The latest scientific advance seems always to be more or less a fabric of dreams, for it stands at first uninterpreted into popular terms, and is as yet unassociated with familiar things. On the other hand, the earlier advances of theory, which appeared so bold in their day, are now condensed into popular proverbs, and clothed with the details of daily practice, so that they seem never to have been theories, but merely the natural products of common sense. This argues that we should draw, from the successes of men of vision, courage to think of the present in the splendid, broad, heroic way which its opportunities deserve. The bravely imagined dreams of one generation, as bravely tested, become the common property and common sense of the next generation.

Chapter VII

THE APPLICATION OF SCIENCE

THE first epoch of science, treated of in the chapter on the Pioneers of Science, exhibited the difficulty of shaking the mind loose from traditional views. The chapter on the System-Makers was devoted to the period in which the great masses of human knowledge were organized and bound together by threading them through with a connective tissue of fundamental principles.

The most recent period of science has, as one of its dominating characteristics, the widespread application of the knowledge already accumulated. Its special task has been to bring controlling truths down out of the skies of theory to the earth of specific instances, and to render them simple enough and flexible enough to control daily problems. By this it is not meant to imply that pioneering and systematizing are no longer required. The pioneers are now waging a warfare against tradition in the domain of psychology and the social sciences. The systematizers are completing their work in the biological sciences, without further theological opposi-

tion. What is meant is that the distinctive feature of the latest period of science is a new emphasis on social welfare. There has come into the world of affairs a generation of young men trained in the world of science. These men desire to bring the two worlds into harmonious adjustment with each other. Animated by the vision of a new earth, in which shall dwell not only righteousness but efficiency, they often find themselves in collision with traditional methods and vested interests.

Thus the full cycle of science stands at last revealed—knowledge is first gathered by observation and experiment; it is then systematized into harmonious bodies of principles; and finally, by means of inventions and new processes, by policies and programs, it reaches down again into and controls the world of individual instances out of which it originally sprang. The order of intellectual progress is, first, pure science, as the explorer and pioneer in a new country, and, second, the practical arts, as the settlers moving in to cultivate the domain, and build human habitations. First comes the change of ideas, and then the change of methods and institutions. As Wendell Phillips said, "In-

surrection of thought always precedes insurrection of arms."

In bringing science and practice into contact, the circulation of nourishing ideas in society is made complete. Science gives to practice its laws. Practice, by attaining a new precision and productivity, yields to science a more exact and generous supply of materials for study, and provides increasingly for its support. Apart from science, practice is the slave of tradition and advances with the timid groping steps of experience. Divorced from practice, science becomes narrow, speculative, unbalanced and, (deprived of its final test of validity), even inconclusive. In the work of making the world a comfortable home for man, one of these spheres of activity is as necessary as the other.

Union of Pure and Applied Science

In mechanics, Black's discovery of latent heat was a laboratory fact until his pupil, Watt, applied it by condensing the steam of an engine outside the cylinder. The laws of Boyle, Charles, Regnault, Joule, and Carnot are known to the world chiefly because of

their application in the steam engine. Galvani's experiments upon frog's legs, with electricity, are important because they ended in the Atlantic cables. The electric arc might have flashed in vain in Davy's laboratory in 1801, and the curiously wound wires might in vain have turned in the field of Faraday's hand magnet, had not a succession of keen minds labored to bring out of them the modern arc light and the electric dynamo. Oersted's discovery that a magnet sets itself at right angles to the direction of a current fruited, fifteen years later, across the Atlantic, in Henry's mind, in the form of a receiver for the electric telegraph.

In chemistry we remember Davy's segregation of sodium and potassium with the Voltaic pile in 1807, and Wohler's production of aluminum by electrolysis in 1827; but we have forgotten the names of the many inventors and chemists, engineers and administrators, whose applied science went into the making of the modern electro-chemical industry. All honor to the crude beginnings of Liebig in agricultural chemistry; but it required dozens of experiment stations to perfect the subject for use. The few simple experiments made by that American of ro-

mantic career, Count Rumford, in the chemistry of combustion, were far from bringing into existence the modern smokeless furnace. The same might be said of the researches of Runge and Hofmann, with reference to coal-tar. Scheele's discovery of chlorine, in 1774, was followed by the purposeful work of Berthollet and Watt, in 1785 and 1786, in revolutionizing bleaching. Schonbein's discovery of gun-cotton, in 1846, started studies to a definite end, which was reached in Nobel's invention of dynamite in 1867. A similar story might be told of the effective bringing of new ideas to bear in dyeing, in iron and steel manufacture, in food preservation, in brewing, photography, tanning, etc.

Difficulties of Applied Science

Inasmuch as the endeavor practically to apply knowledge sets out with a definite goal, and purposefully rejects all results but those which lead to the one end, it demands sagacious directing and large patience. It is notorious that the first idea of most inventions is crude, and can be made of practical value only by tedious and expensive adaptation and simplification. The same is true of crude scientific ideas.

One of the difficulties of applying scientific knowledge lies in the fact that problems of application are complex. They are so for the reason that the solution aimed at must satisfy tests of divers character Not only must the principles of the sciences from which the knowledge is drawn be regarded, but the practices of those arts in which it is to be applied must be observed as well. As all practical affairs are mixed of many elements, the limits and standards applying to them are equally numerous. A mechanism must not only be sound mechanically, but it must be easily produced, adjusted, repaired, cleaned, learned, and operated. An executive policy must not only conform to the principles of psychology, but its agencies must be on a scale commensurate with the enterprise to be controlled, the cost must not unduly increase administrative expense, and the plan must be capable of gradual introduction and easy modification.

Work of a practical character takes on usually the nature of a compromise. It requires the type of mind capable of keeping many things in view at once, and of balancing opposing considerations. Results come by means of a slow and tedious succession

of approximations, rather than by the more simple and satisfying method of going the limit regardless.

Again, the solutions of applied science are discouragingly temporary. Where there are so many determining factors, it is to be expected that some of them will quickly change, and in so doing will start the process of obsolescence.

Theory versus Practice

To the necessary and inherent difficulties of work in applied science, there are to be added unnecessary ones arising from the distrust and antagonism with which the followers of pure research and men of affairs regard each other. Those who endeavor to adapt science to the needs of practice sometimes have the ungrateful task of intermediaries, misunderstood by both sides. On the one side we hear the phrase, "Science for its own sake," and on the other, "No impractical theories"; and these slogans are uttered in a sententious manner as though they represented a true issue.

The scientific point of view is to follow the lead of the subject-matter. This means that when the aim of any piece of work is com-

plete knowledge of a given subject, it is not intelligent to complicate the problem by adding the question of the use to which the knowledge is to be put after it is attained. This is simply following the rule of having a properly circumscribed aim; a practice the value of which all administrators understand.

On the other hand, the practical problem begins by setting a specific goal, such as a desired substance or process. It inquires the most expeditious means of attaining this result. In such a case, to investigate those aspects of things which obviously have no connection with the problem, on the ground that the stock of human knowledge will be increased by so doing, is to forget what one is about. The scientist and the practical man both give themselves immense credit for following precisely the same rule,—that of the division of labor.

To the "practical" man, the scientist incubates inefficiently, because he does not check up vigorously enough with himself. And this arises from his hazy philosophy of not knowing exactly what he wants, or the probable value of it all. The scientist sometimes gives an unjustifiable extension to the rule of his work which is expressed by the

phrases: "Truth for Truth's Sake," and "Art for Art's Sake." This is a minor rule of thinking, essential within its proper sphere, but it is limited in validity and in appropriate application by the force of the greater rule of life,—Truth and Art for Man's Sake.

To the scientist, the "practical" man does not even know the wide range of the practical. By impatiently applying to intermediate productive steps the tests which are appropriate only for final results, he cuts himself off from many indirect but highly profitable chains of productive effort. That science and practice are different is not a reason for antagonism, but for co-operation. Each may exercise a corrective influence upon the other. "We may hope," said Huxley, "that, at last, the weary misunderstanding between the practical men, who professed to despise science, and the high and dry philosophers, who professed to despise practical results, is at an end."

Science as a Phase of Vital Living

Men of affairs often make the mistake of conceiving scientists as a nervous, scholastic type of men, rather puny in physique, and inclined to be wandering and loosely co-ordi-

nated in mind. Nothing could be further from the truth. Results do not come from men who have not their energies under effective control; and certainly the results of the last three hundred years of science are an evidence of energy. Science has been a revolt against tradition; a fight for liberty to go to the bottom of things. It has displayed the enterprise of the discoverer, curiosity to think the Creator's thoughts after Him, a love of conquering difficulties, and a determination to rule the forces of nature rather than be ruled by them. In short, it is in every way positive and aggressive, and is, therefore, the expression of men with energy plus.

Among scientists we find ability of every type; there are men of prodigious energy, like Galileo and Bunsen; men of enthusiasm and vivid imagination, like Kepler, Haeckel, Werner and Laplace; men of rapid and accurate observation like Johann Müller; men with the power of clear, deep reasoning like Newton, Henry Cavendish, and Boerhaave; and men of great breadth of interest like Descartes, Adam Smith, and Diderot. There have been men of early precocity like Grotius, Thomas Young, Sir William Hamilton,

and John Fiske; and men who combined success as administrators with success as scientists, like Turgot, Bunsen, Cuvier, Leibnitz, and Wilhelm Humboldt. After making a study of the lives of eminent men of science in England, Francis Galton wrote:

> Leading scientific men are generally endowed with great energy; many of the most successful among them have labored as earnest amateurs in extra-professional hours, working far into the night. They have climbed the long and steep ascent from the lower to the upper ranks of life; they have learned where the opportunities for learning were few; they have built up fortunes by perseverance and intelligence, and at the same time have distinguished themselves as original investigators in non-remunerative branches of science. There are other scientific men who possess what is sometimes called quiet energy; their vital engine is powerful, but the steam is rarely turned fully on. Again, there are others who have fine intellects, without much energy; but these latter classes are quite in the minority. The typical man of science has been at full work from boyhood to old age, and has exuberant spirits and love of adventure.

Another mistake of men of affairs has been to assume that science is a field apart; a world with the ferment of whose ideas they need not concern themselves, except as new materials or processes are occasionally handed over to industry by the scientist. The principal thing about science is not its results, but its method, its point of view, and

its spirit. These are constantly spreading into and controlling new fields. The intellectual awakening which began with the Renaissance revolutionized our conceptions of the physical world in which we live. It concerned itself much, at first, with the struggle for freedom from the tyranny of dogma. It laid a new foundation for political institutions, and the result was revolutions and constitutions. It pursued the study of nature, and the result was a revolution of technique. It is now focusing attention upon economic and social policies. The modern man is determined to bring everything to the bar of reason and, with his intelligence, to institute a new survival of the fittest among social institutions, and among industries, administrative policies, and leaders. Everywhere men are making inquiry concerning the justification of current practices, and are demanding exact measurement and solid proof of their appropriateness, efficiency, justice, and humanity. We may rest assured that no corner of industry will long remain unexplored, unjudged, and unrevolutionized.

Chapter VIII

THE PRINCIPLES OF MENTAL EFFICIENCY

THE periods of the history of science which we have considered in the preceding articles have emphasized three things; the bravery of original thinking, the practical nature of theories, and the fact that "beauty underlies each form of use." There are a number of principles of efficiency in mental work which are either directly involved in the scientific method itself, or are corollaries or logical extensions of it. These principles have been at work in each of the epochs of science, and consequently cannot be properly placed in any one period in an historical review. Let us take up some of the more important of these principles, and endeavor to find their bearing upon the work of administrators of industrial enterprises.

Economy of Means

Many an executive officer, after introducing changes urged upon him as improvements, has awakened to find his affairs suffering from a remedy worse than the dis-

ease, and his business unsystematized by over-elaborated system. Such a one has, perhaps, exclaimed in his wrath: "No more fine-spun theories; I want practical facts," and in so doing has imagined himself taking a practical and common-sense attitude quite unknown to the scientist. He has felt resentment against science and system-makers, much as a man who has cut himself with a razor might blame the barber who had honed it for him.

The principle which is made apparent, wherever red-tape is discovered, may be stated as follows: perfect efficiency requires that the means employed for the accomplishment of a result shall be neither more nor less in quality, quantity, or cost than is just sufficient for the purpose. The use of excessive means is only less unworkmanly than the use of insufficient means. Either case violates the ideal of economy of means.

With this ideal scientists have long been familiar. For its sake some of them suffered from the wrath of an enraged public opinion long before most of the problems of the modern industrial executive came into existence. To cite a celebrated instance, to which reference has already been made, the rise of the

theory of evolution in geology produced the belief that the stratification of rocks, and all topographic features of the earth, were brought about by the operation of known forces, acting in a normal way, through a long period of time. This explanation was opposed to the popular notion, and to the official theological view that the earth was created in six days by the direct use of dramatic and awe-inspiring force on the part of the Creator. It was thought that the traditional account of creation proved the primacy of the earth among the heavenly bodies, and testified eloquently to the supreme value of man in the created universe. When, therefore, it was asserted by scientists that the rocks were produced by familiar forces, acting in a simple mechanical way, the new theory was denounced as an effort to do away with the splendid drama of creation, and to introduce a vulgar and sacrilegious economy of effort. The contest through which geology passed in establishing its view served to fix firmly a general scientific principle, namely, no result should be attributed to more numerous or more powerful causes than the minimum which it is conceivable could account for it.

The struggle of the man of affairs to accomplish results with minimum agencies is perfectly in harmony with the effort of the scientific mind to establish an economy of nature, by means of the doctrines of the indestructibility of matter, the conservation of energy, and the universality of law.

The Wide Range of the Practical

Men of affairs learn the wide range of the practical by discovering, through experience, how numerous are the uses of a given body of knowledge. Most men have had the experience of acquiring in youth some out-of-the-way body of knowledge, or some unusual skill or talent, and of having been surprised, in later life, at the number of occasions requiring its use, or permitting its use to advantage. It has been said that any one subject thoroughly mastered will open lines of logical connection with every other subject. To this thought Tennyson gave poetic expression in the well-known lines:

> Flower in the crannied wall,
> I pluck you out of the crannies,
> I hold you here, root and all, in my hand,
> Little flower—but if I could understand
> What you are, root and all, and all in all,
> I should know what God and man is.

Certain it is that any one thing well mastered will go far to reveal how to master anything else. The man who demonstrates capacity in one line can easily convince people that he possesses it in other lines. Any virtue or ability which makes friends may be a stepping-stone to anything else which friendly backing can provide.

Men of science learn the wide range of valuable ideas by discovering how many things are able to throw light upon a given investigation. It is impossible to tell in advance which of the results of an investigation will be the starting point of future fruitful researches and applications. Who would have considered that a physician practicing medicine in Java, and observing that the venous blood of his patients was a brighter red than that of people in colder zones, had made a good start toward the enunciation, within two years, of the world-embracing doctrine of the conservation of energy? Such was the beginning and such was the conclusion of Mayer's studies between 1840 and 1842. New ideas come by a process of mental cross-fertilization. They are a sort of electrical discharge flashing light into consciousness, as two storm-clouds of knowledge ap-

proach each other. A man trained to think upon one line alone will never be a good judge even of that, for he has not the perspective by which to distinguish between the essential and the trivial. To accomplish results, men of science have learned the necessity of excluding prejudices and preconceptions, and even, at certain stages of research, enthusiasms and specific aims, in order to keep the mind completely open and receptive to impressions from all sources. As Gore says: "The beginnings of discoveries are often so very small, that it requires acute senses and observation in order to perceive them; and if the mind is preoccupied with a desire to discover some particular practical object, new phenomena are overlooked."

Great truths are not necessarily great in their origins. The sensation made by a discovery comes later, when the corollaries and resultants are perceived, and the world feels the full significance of what has been discovered. A new truth is likely to creep timidly into some carefully prepared and waiting mind as a hint derived from some puzzling irregularity, or through some faintly remembered analogy, or as the conclusion of

a series of small facts which build up to it. The truth may be in its first form so simple and useless that it has been discovered and ignored again and again, passing in and out of the mind unnoticed. Great ideas must often pass through a period of incubation in which they are dependent upon the maternal care of a mind able to perceive large possibilities in little occasions.

Great truths are not necessarily difficult to understand. Much valuable knowledge has been lost because investigators would consider that only to be important which was complex or abstruse. Some of the greatest ideas have been the simplest. How simple is Bacon's law, which forms the basis of the scientific method, namely, that things which in experience agree in being present, or absent, and in varying concomitantly, are connected! How elementary seems Darwin's theory of evolution through variation and selection, or Gutenberg's invention of movable type, or Bessemer's plan of reducing the carbon content of melted pig-iron with a blast of air, or the essential mechanism of the telephone! These things can be described in a few words and understood by a child, and yet what results they have wrought upon

the earth! The ideas involved in them slept undiscovered, just beyond the veil of mystery, since the dawn of reason on the earth, awaiting an age with flexible temper, and an individual mind willing to regard simple things with searching attention. How many more serviceable ideas are yet hidden, awaiting the unsophisticated mind!

Great truths do not necessarily spring from impressive subjects. The origins of great ideas are frequently most humble. Residues and wastes, unconsidered remnants, slighted phases, unpopular subjects, and domains of thinking marked by the taboo of popular ridicule, are all promising fields for great discoveries. We are just beginning to appreciate the significance of shop wastes, minute but frequent time losses, city sewerage, street noises, smoke, the tools of the day laborer, the rest periods in common work, abandoned farms, domestic science, and many other things which have been, until recently, considered the odds and ends of the world of thought. The very neglect of a subject, in proportion as it has been long continued, means that it is a harvest field for the student, which has not been reaped clean. To work in a neglected field is almost as

profitable as in one which has been previously inaccessible. A prejudice against a subject only serves to reserve and protect it until the first bold thinker appears. No attitude of mind is more practical than that which expects valuable suggestions from any quarter, and is prepared to see an unimagined significance grow out of neglected things. Again and again, in the history of the human mind, has "the stone which the builders rejected become the head of the corner."

Nor are the applications of great ideas necessarily dramatic, complex, or aristocratic. The valuable physical materials of the world (in their aggregates) are not gold nor silver nor jewels, but soils and manure and pig-iron and lumber. Likewise, the great principles which control the mind of man and his organized activities are the simple basic ones which, in the lives of the masses, become multiplied to colossal aggregates of service. To discover a law of soils may easily be a million times more important than to revolutionize the art of cutting gems; to increase by a fraction the efficiency of every man who lays brick or shovels earth may mean a greater national service than many of our presidents have achieved.

The man of affairs should take care to prevent himself from falling into the habit of thinking that neglected things have no problems worth considering, or that what is familiar is thoroughly understood. He must beware of assuming that knowledge comes only through the kind of experience he has had, or that the outsider can give him no suggestions for improving the conduct of his business. The intensely "practical" mind tends to conceive experience too much as action and not enough as thinking, too much as the doings of individual men and not enough as the expression of the basic talents and motives of human nature, too much as a static present and not enough as the continuous evolution of the past into the future. By so doing it unduly restricts the times, places, subjects, and persons from which stimulus and guidance may originate and come to it.

Follow the Lead of the Subject-Matter

The observations of the untrained mind are imperfect; a little is actually seen, by far the greater part is inferred. In customary action things are hastily identified by a few signs, and what is observed is supplemented

by bald assumptions and carelessly formed theories. Says Baldwin:

> Half of what we see and hear never comes in through our senses at all, but is made up outright—suggested by scraps and hints that do come in through our eyes and ears. In a foreign land, when the mind is not so ready to fill in the gaps in the unfamiliar language we hear, one begins to appreciate how largely, in our mother-tongue, the mere act of catching the sound of the words, not to say their meaning, is a matter of suggestion. And in other ways we can see that as soon as things grow familiar and suggestive, it is impossible ever to experience them again in their naked reality; what the bare sense-impressions call up to us becomes interwoven with them, and these additions can with difficulty be distinguished from what is original. * * * It took centuries for artists to see that the shadow on a colored surface was not a darker tone of the same color, but had usually something in it of the complementary hue. The natural preconception as to what the color of the surface ought to look like, from having seen it in a clearer light, made it impossible to see the thing aright.

Accurate, keen, fast, and complete observation is a rare and highly prized element in all mental work. To attain it in any degree the scientist has need of the ideal mind described by Francis Bacon, "versatile enough for that most important object, the recognition of similarities, and at the same time steady and concentrated enough for the observation of subtle shades of difference," with "a power of suspending judgment with

patience, of meditating with pleasure, of asserting with caution, of correcting false impressions with readiness," willing to arrange thoughts with careful pains, without passion either for antiquity or novelty, and hating imposture in every shape. The true scientist endeavors, with all the power he possesses, to follow the lead of his subject; to fix upon it, sense its most delicate hints, flexibly follow every turn and winding, and thoroughly explore all aspects, to the end that he may finally conceive it accurately, justly, and comprehensively. Research is a pursuit —a game of hide and seek. In it the mind should follow the lead of the subject as the nose of a hound clings to the trail of the fox. All the powers of observation should be let loose to full, free activity, by the joy of action, by the harmonious concurrent working of the senses and the reason, and by a blended confidence and carelessness as to results. Since Descartes formulated the golden rule of restricted assent, that we should give unqualified acceptance to no propositions but those the truth of which is clearly established, it has been the ideal of the scientific worker to emulate that great master when he said, "My whole intention

was to arrive at a certainty, and to dig away the drift and sand until I reached the rock or the clay beneath."

It is a splendid exercise for every man, at least once in his early life, to throw himself unreservedly, and with enthusiasm, into some study, and for a time "go the limit" in thoroughness, accuracy, caution, and open-mindedness. Such an experience will exert a lasting beneficial influence upon his thinking. It will teach him respect for facts, and give him some ability to go straight to them. It will reveal the joy of collecting facts carefully, of distinguishing them closely, and of formulating their law with precision. It will forever after make it easier for him to throw off the hampering bonds of tradition and habit and personal bias.

Good observation is essential to good morals. The want of clear thinking is one of the causes which leads men into inconsistencies, and tempts them to evade their dilemma by false pretenses. The double load of circumstances thus created—the real and the pretended—leads men at last to pronounce upon themselves a secret verdict of inefficiency, by which they lose the captaincy of their own powers. "How many an ac-

tion," says Gomperz in his Greek Thinkers, "injurious to the common welfare, would have been left unperformed, had not a veil of misty thought concealed from the doer of it the fact that it belonged to a class of actions admitted by himself to be reprehensible."

Open-Mindedness

To follow the lead of the subject-matter is to practice open-mindedness in the original investigation by which the first judgment on a subject is formed. To show open-mindedness is to follow the lead of the subject-matter when it demands the revision of a judgment already made.

The difficulty experienced in altering a conclusion lies in the fact that any belief held by the mind tends to banish opposing considerations, or to diminish their force. A firm believer is one who usually continues gathering fortifying data, and slighting opposing evidence. Darwin said in his Autobiography:

> I had, during many years, followed a golden rule, namely, that whenever a published fact, a new observation or thought came across me, which was opposed to my general results, to make a memorandum of it without fail and at once; for I had found by experience that such facts and

thoughts were far more apt to escape from the memory than favourable ones. Owing to this habit, very few objections were raised against my views which I had not at least noticed and attempted to answer.

This natural difficulty is increased when pride takes a perverted form, and emphasizes consistency with one's previous program, rather than consistency with controlling truths. Such a pride is mistaken, for one of the vital distinctions between general principles and specific programs is that the latter are local and temporary, while the former are not. Programs are based upon assumptions good only for a particular time and place. Again, such a pride is mistaken, because it misjudges human nature. The virtues which spring from conceit evoke little sympathy and support from others. Everyone loves to bring the truth to the aid of those who gratefully receive it and humbly modify their course of action by it. On the other hand, everyone enjoys using truth to humiliate those who show a perverse and stiff-necked disregard for it.

The seeker after facts must keep his mind fluent and sensitive and teachable. To revise an opinion is not merely to eliminate an error, and secure a specific new truth; it is, by a reflex action of the mind upon itself,

to refine the thinking process, much as a photographic plate is resensitized, or the needle of a compass is remagnetized.

The philosopher Nietzsche has given to men of affairs a high place, with respect to open-mindedness. He asserts that a cautious forbearance in judgment, and wise moderation in action—in short, the scientific spirit, but without being defined as such—is much better known in practical life than among thinkers. The man of action who develops this virtue deserves great credit, for he does so under difficulties. He is called upon to apply tentative conclusions in a vital public way, without drifting into a practical acceptance of them as final, and without committing himself to them in an unintended sense. He must be able to feel the intense pride in achievement which is the characteristic of all active men, but without over-estimating the permanence of the results secured. He must be able to look upon the old as the fittest which has survived, and yet perceive that the longer the old has stood the more likely it is that the competitive conditions which permitted it have changed and will sweep it away. The man of affairs must recognize that what is widely demanded and is, perhaps, most prof-

itable to supply to the public, or most easy to use, is yet likely to be the mediocre thing, comfortable to the average mind, rather than the finest thing which expresses the best thought of the time. He must deal constantly with cramped and tradition-bound minds, and yet keep his own thought free. He must be able to set precedents which express a principle, without embalming it; and to accept truth when associated with insubordination, competition, or even failure. He must be able to turn freely from action to deliberation, and from deliberation back to action. He must live his life strenuously, and yet strenuously avoid the induration of ideas which characteristically marks the on-coming of old age.

Exceptions and Failures Reveal New Laws

A thorough and well-sustained investigation into any subject has the effect of concentrating attention with ever-increasing intensity, as the work progresses, upon the residuum of unexplained or exceptional facts. The degree to which one has secured knowledge of any subject, or has learned how to secure it, may be judged fairly by the attention given to exceptions. The beginnings of

studies are with typical and normal cases; their conclusions with exceptions.

An old maxim is, "The exception proves the rule." This might better be amended to read, "The exception reveals a new rule." An exception shows the working of some force not accounted for by the rule. It reveals something new, something not yet understood, something remaining to be done, a promising ground for a new start. It was said of Darwin, "There was one quality of mind which seemed to be of special and extreme advantage in leading him to make discoveries. It was the power of never letting exceptions pass unnoticed. * * * These things he seized upon to make a start from."

A good test of one's ability to gather new ideas is his action under defeat. The severe rule of competition compels the man of affairs to "make good" with useful results, from step to step in his business career, in order that he may gain resources and the confidence of others, with which to attempt the next greater achievement. Failure has for him a peculiarly sinister sound. It not infrequently happens, therefore, that when failure overtakes an executive, the agitation springing from his hatred and fear of it, and

the preoccupation resulting from his effort to evade or ignore it, cause him to banish the details of it from mind without attentive consideration. The helpful ministry of failure is thus lost. Like Simon Ingott, he reads "Much Ado About Nothing," and sees no point in the phrase, "Adversity's sweet milk."

The scientist, working with a longer tether, and with a mind composed to accept delay and round-about methods with equanimity, has learned better how to utilize failures. He does not ignore them, nor turn his back upon them, but on the contrary, he fastens with special eagerness and tenacity upon them. To the scientist, failure is a means of discovering truth only a little less direct than success. It proves how a thing cannot be done and, in so doing, closes up one of the by-paths down which investigation might turn.

It is partly the paralysis produced by the fear of failure which makes failure dangerous. One of the causes of undue fear is exaggerated pride and self-consciousness. When pride is controlled, hostility to opposing opinion, and panic under failure, disappear. The result is a serene and objective

temper, like that for which Julius Cæsar was noted. With such a temper the intelligence is flexible enough to turn in whatever direction significant facts lie, and to receive instruction even from enemies. Thus a man may add to himself a new resource, namely, the suggestion derived from the investigation of his own disappointments.

One of the reasons given by Draper for the great mental efficiency of the nineteenth century is the friendly eclectic attitude which came to prevail, which recognized few differences as irreconcilable, and avoided sharpening them into hostilities. "The question," said Draper, "is no longer whether a particular doctrine or its opposite is true, but what are the elements of truth and error in each of them, and how can we attain to a comprehensive view of things, in which justice is done to both."

Thoroughness

Thoroughness is the virtue which results when energy is brought to bear upon carefully circumscribed aims. "High knowledge and great strength," says Emerson, "are within the reach of every man who unflinchingly enacts his best." The virtues of thor-

oughness have been preached until they are trite. It is not only the merit of science that it reënforces this teaching, but also that it gives us a new definition of what constitutes accuracy and thoroughness.

In the long series of scrupulously careful weighings of nitrogen, performed by Lord Rayleigh, a constant discrepancy of less than one-half of one per cent led to the discovery of argon, and other minor constituents of the atmosphere. In determining the latitude of the Radcliffe telescope at Oxford, by means of repeated and elaborately exact determinations, the error was brought within 1.02 seconds, or thirty-four yards on the surface of the earth. From the eight tons of concentrates, treated during two years by the Curies at Paris, there was only as much radium recovered as could be heaped in a salt spoon. By such work scientists have shown what thoroughness can be made to mean in terms of accuracy.

In Newton's eighteen years of work upon a missing link in his explanation of the orbit of the moon, and in Darwin's twenty-two years of work upon the origin of species, from the opening of the first note book in July, 1837, to the completion of the finished

work in November, 1859, scientists have shown us what a portion of the world's work requires in the way of patience.

There is certainly something to be learned by men of affairs from such a spirit and such ideals. They show what it is possible to do. It is a stimulus to the timid or weary to know that others have dared vastly more than they, and have succeeded. These achievements of the human spirit scientists offer for the encouragement of any man who works in the world of ideas. "Few things," said Rochefoucauld, "are impossible in themselves; the application to make them succeed fails us more often than the means."

Methods Are More Valuable Than Results

For the intelligent understanding of any art, or craft, or professional activity, it is essential to distinguish between methods and results. As a rule, good methods alone bring satisfactory results in industry as elsewhere. The exceptions to this rule are, unfortunately, very numerous. Carefully planned actions sometimes end in unpredictable disaster while, on the other hand, in a favored land like ours, which drops fatness, many persons have acquired wealth by stupid and

anti-social means. Many great estates in America are flabby hulks of property, hanging together because they happen never to have been challenged to economic combat by first-class ability. They resemble antediluvian monsters of low organization, floundering in the economic mire of a new and bountifully endowed land. Their pretensions, as oracles of economic wisdom, constitute a pseudo-science of industry with which every student of business administration is compelled to deal. They really testify merely to the richness of the feeding where they were grown. Such estates can be found where ignorant immigrant labor, unable to defend itself as does the native, has been exploited; where over-grown industrial infants have successfully cried for prohibitive tariffs; where principalities of public domain have been seized by circumventing antiquated land laws; and where small investors, too much devoted to their life work as teachers, doctors, or mothers, to master the intricacies of the American "science" of promoting, have been fleeced. To study such enterprises, with the idea of discovering methods appropriate to a respectable and permanent science of industry would be about as intelligent as

to study the unfortunate fat boys of dime museums to discover the road to health.

On the other hand, American industry abounds with men and industrial establishments whose histories are significant for the future of industrial affairs. Engineering has never been more dramatic and courageous than in American railway construction; merchandising has never gone further in offers of service and guarantees of satisfaction than in American department stores and mail-order houses. A nearer approach to the scientific control of industrial operations has probably never been made in the world's history than in those establishments now employing "scientific management." There are men in this country who have shown the world how to save time and toil, how to meet the unexpected with infinite resourcefulness, and how to preserve an unsullied personal honesty under the cloak of corporate organization. There are leaders who, without systematic training in youth, have yet built up a new science of affairs, the principles of which can be taught to the coming generations.

Few things will help forward the science of industrial administration more than to

drop the old question, "How much is he worth?" and press the new one, "How did he get it?" A true aristocracy will never be formed in American industry until all good men unite to draw the lines sharply, and resolve to give honor only to those who have shown the capacity to observe accurately, to think straight, to preserve their ideals, and to develop productive rather than predatory industries.

In the long run, methods are infinitely more important to industry than the results which at any given moment embody their effects. The prevalence of honorable and efficient methods is the only thing which can keep open the road to future achievements. The first care, therefore, of the business community should be sound methods. We hear much of governmental and other reforms which are feared because they will disturb business. It is safe to say that there is hardly any probable destruction of property which will not, in the long run, prove immensely profitable, if it is the price which must be paid for a superior method. To say this is merely to apply the well-established American principle of scrapping obsolete equipment, to the problem of getting rid

of superseded and worn-out methods and policies.

The paramount value of methods was emphasized by Mr. Carnegie, when he said, "Take away all our factories, our trade, our avenues of transportation, our money; leave me our organization, and in four years I shall have reëstablished myself." Results change from day to day; scientific methods are a heritage of intangible capital of more permanent value. Results represent past conditions; methods prepare for what is to come. To possess efficient methods is to have the power to recover lost results, or to replace obsolete results at will; but to possess results with inadequate methods is to begin at once to fall behind. Results may be acquired by accident; methods are transmitted only by the slow growth of habits. Results may be easily transferred; to the attainment of superior methods there is happily no royal road.

Chapter IX

THE PRINCIPLES OF MENTAL EFFICIENCY (*Continued*)

THERE are certain advantages characteristic of each of the different stages of any long-continued course of study. The beginnings are marked by a certain buoyancy and fertility of suggestion, and by vivid consciousness of details. More advanced effort is marked by grouped handling, ready and semi-automatic action, and sustained and assured power. The light of reason is, at the beginning, a series of brilliant flashes; later on, it becomes a more steady but less penetrating glow. At first the thought flies with light freedom and unconventionality from one boundary of the subject to another, revealing the most unexpected relationships; it later moves with more force, but greater circumspection, in definitely prescribed channels.

It is the general opinion that the advantage of thoroughness is within the reach of any well-endowed person who will, with tenacity, work himself deeply into the heart of his subject; but that the virtue of originality is

the exclusive privilege of talent. While there is truth in this belief, it seems reasonable to say that the talents which fit a traveler to become familiar with a well-settled country should, in some degree, qualify him to explore a new one. Is not originality, indeed, a sort of tenacity in asking questions about a subject, and in keeping one's self in the initial stage of free inquiry? If thoroughness comes from tenacity in penetrating into a subject, does not originality come from tenacity in opening new avenues to it, viewing it in new perspectives, and in bringing it into comparison with all things?

The Fertility of a New Point of View

The fertility of a new point of view lies in the fact that when two bodies of ideas, never before united, are brought into comparison, the mind observes relationships, and draws conclusions, which cannot otherwise be attained. From any given body of facts the number of useful conclusions which can be inferred is limited. Further advance in thinking then awaits the introduction of new facts. The original mind is one which, more perseveringly and boldly than others, travels up and down through the world of ideas for

new facts, and brings them into comparison with that which it desires to understand.

Industrial literature recognizes the value of the "outside point of view." This is based upon the realization that every mind which considers a matter brings into comparison with what it sees a fund of experiences and stock of previous knowledge somewhat different from that of any other mind. Every mind has its own viewpoint, and can make a unique contribution of ideas, however humble. If a superintendent who has just remedied great losses in haulage and handling visits an industrial establishment, he is likely to see its practice with reference to the movement of materials with a more intense and suggestive vision than the managers themselves. A teacher, trained in child psychology, may instantly observe that youths in an office or factory are assigned to tasks for which the corresponding faculties have not yet sufficiently developed. A diplomat, or an alienist, may detect in a staff the evidences of strain, invisible to those who are adjusted to the situation by familiarity. An insurance adjuster may see easily avoidable sources of fire risk. A doctor may notice the bad air; and an engineer may observe

the over-run of machines. Men differ, not so much in perceptive powers, as in their skill or good fortune in working themselves into new and productive points of view, while others are hampered by looking from the traditional angle.

There are various suggestions which may be of service in attaining new points of view. One is to consider, in turn, the various properties or aspects of the thing concerned. A machine may be considered with reference to the use of power, economy of materials, output, skill of attendant, fatigue of attendant, rate of depreciation, liability of accident, cost, accessibility, repairability, etc. An administration may be judged as a system of checks and balances, a solidarity of interests, a repository of information, a teaching agency, a center of enthusiasm, a judge of rewards and penalties, a promotion ladder, a disciplinary power, a trustee of capital interests, an exponent of the operative's welfare.

Another rule is to assume the increase and dominance, or the diminution and elimination, of any factor or tendency, and inquire what the consequences would be, and how they could be met. Mr. Lewis' article in

THE ENGINEERING MAGAZINE for January, 1901, is an excellent example of this kind of study. Still another suggestion, allied to the last, is to search out and study those cases in which the particular phase or agency of performance under consideration has been specially stressed, as where good results have been attained in spite of extraordinary difficulties, or where exceptional results have been achieved under ordinary conditions.

One of the chief enemies of originality is the prestige of the established order of things. The current methods of thinking and acting have the advantage of being embodied in tangible forms. The constant repetition of stock opinions tends to wear ruts of acceptance in all but the most independent minds. Custom and tradition are valuable to preserve the heritage of knowledge already gained, but they serve, nevertheless, as curtains to shut in and darken the mind, and prevent it from seeing in each day the beginning of a new life.

Civilization is passing out of a period of traditional knowledge into one of scientific knowledge. There still survives, however, in many fields of practical action, an intellectual timidity, proper to empirical knowledge, but

which science has long since cast aside as no longer essential to self-preservation. The remedy for such timidity is the introduction of scientific methods.

Unity of Principle in Variety of Embodiment

The mediæval ecclesiastical conception made of history the record of the interference of an over-ruling divine wisdom in human affairs. When, in the Renaissance, men began to look upon past events as the record of the temper of men, and of their vices and virtues, it was found possible to discover principles of social action; and so the science of politics was founded. A change analogous to this is now going on with reference to business administration. Public opinion has been looking, with open-mouthed awe, at the doings of business leaders, and at the complex mechanism of industrial enterprises. These things have been esteemed the records of supermen, whose doings are above human nature, and beyond formulation into laws. But public opinion is changing. This generation is not so over-awed by the Captains of Industry. It now sees in business, for the most part, ordinary human nature in calcu-

lable movements. It perceives that there is a rational ordering of authority and responsibility wherever efficient joint action takes place. And so a science of administration is coming into existence. The science comes now, not because the principles are for the first time at work in the world, but because the advance of thinking has melted away interfering preconceptions, so that men are at last free to turn and look at the facts.

There is but a comparatively small number of underlying administrative principles; but there are in the world of affairs endless adaptations and combinations of these elements into policies and programs. To perceive that problems of administration are problems of human nature, to understand basic principles rather than mere corollaries or specific derivations of them, and to perceive under a wide variety of circumstances the occasions which call for a single rule, is to sweep away much superficial complication, and to attain administrative insight. With a knowledge of principles, the administrator can steer through the heterogeneity of affairs, as a pilot, steering by the stars, keeps to his course, regardless of the direction of wind and waves.

By diligently exercising himself in the recognition of administrative principles, the student will find his eyes opened to evidences of their operation in all forms of associated effort. If administration has to do with human nature, anything which extends the executive's knowledge of human nature confirms his grasp of its principles. The executive may assert that he is interested only in industrial affairs, but if he will admit that one of the tasks of industrial organization is to educate men for their functions, he thereby admits that the business executive may profitably study school administration and pedagogical principles. If discipline is an industrial function, the history of war will be pertinent. If investigations have to be made, science can show how to conduct research and weigh evidence. In short, the field from which a knowledge of administrative principles can be gleaned is precisely as extensive as the application of those principles in human society.

This underlying structure of administrative principles, upon which are based all human affairs, Socrates once revealed to a disappointed candidate for military office, by showing him how the qualities essential to

good generalship are employed by the merchant who is able to collect a stock of goods, the leader of a chorus who is able to select competent teachers, and the manager who can order the affairs of the large classical household, with its dependent slaves. When his friend protested, saying, "By Jupiter, Socrates, I should never have expected to hear from you that good managers of a family would also be good generals," Socrates responded:

Come then, let us consider what are the duties of each of them. Is it not, then, the duty of both, to render those under their command obedient and submissive to them?

Unquestionably.

Is it not also the duty of both to intrust various employments to such as are fitted to execute them?

That is also unquestionable.

To punish the bad, and to honor the good, too, belongs, I think, to each of them.

Undoubtedly.

And is it not honorable to both to render those under them well-disposed towards them?

That also is certain.

And do you think it for the interest of both to gain for themselves allies and auxiliaries or not?

It assuredly is for their interest.

Is it not proper for both also to be careful of their resources?

Assuredly.

And is it not proper for both, therefore, to be attentive and industrious in their respective duties?

In conclusion, Socrates brought the matter back to the principles of human nature, saying:

> Do not, therefore, despise men skillful in managing a household; for the conduct of private affairs differs from that of public concerns only in magnitude; in other respects they are similar; but what is most to be observed is that neither of them are managed without men, and that private matters are not managed by one species of men, and public matters by another; for those who conduct public business make use of men not at all differing in nature from those whom the managers of private affairs employ; and those who know how to employ them conduct either public or private affairs judiciously, while those who do not know will err in the management of both.

It remains only to add that the writer who recorded the above conversation with approval was Xenophon, one of the most noted generals of ancient times, and the hero of The Retreat of the Ten Thousand.

To master his science, the administrator should practice himself as a mental athlete in seizing his principles under whatever guise or outward seeming they present themselves. He should strip them to the bone of their essential truth, and clothe them again with the details appropriate to specific applications. The administrator should look for his principles everywhere, and set for himself problems in carrying them from field to field,

from industry to industry, from club to college, from church to state; adjusting them always with a scrupulous regard for propriety, worthy traditions, the delicacies of human sentiment, and other factors of change.

Co-operation

Industry and science agree in making large use of that simple form of co-operation, commonly known as the division of labor, by which persons of unlike genius are united in the same enterprise, for the accomplishment of different functions.

The dawn of modern science in Europe presented, in the life history of two noted men, a striking instance of the benefits of individual co-operation. Tycho Brahe, the leading astronomer of the latter half of the sixteenth century, was a nobleman of proud spirit and, by reason of a certain dramatic talent which attracted attention, able to secure from his royal patrons large grants for astronomical apparatus. He was an expert instrument maker, and an accurate observer. His life was spent largely in compiling tables of observations of planetary movements. Kepler, who came under his

patronage, and who worked with him for many years, was a poor observer, suffering from defective eyesight. He was awkward in his movements, and possessed little mechanical ability. He was, however, a good mathematician, and he possessed the rare ability to become enthusiastic over statistical calculations. The five laws of planetary motion which Kepler discovered, and the Rudolphine tables which he completed, are monuments to a splendid and devoted co-operation between two geniuses of entirely different endowments.

Applied science has a similar example of fruitful co-operation, in the case of Isaac Watt and Matthew Boulton. Watt has described himself in the following words: "I am not enterprising. I would rather face a loaded cannon than settle an account or make a bargain; in short, I find myself out of my sphere when I have anything to do with mankind." Boulton was a man of affairs, full of energy and common sense, and possessed of property. He is remembered because he was able to perceive and respect the talent of a man entirely different from himself, and because he tenderly encouraged and courageously defended that genius through mani-

fold attacks and disappointments, to the lasting benefit of the world.

There are abundant illustrations of the fruitful co-operation of men of different talents, in business. There are even enough men of wealth ready to enter into an arm's-length alliance with science and education, by means of a cold bequest. But there is a waiting opportunity for men of affairs to go into living, daily partnership with the arts and sciences, by entering into close personal relationships with men who need the help of a natural administrator to make their contribution to progress. A good many captains of industry might weave their names firmly into the fabric of history, as did Boulton, by aiding some delicate flower of genius with energetic counsel and a wise corrective influence.

One form of co-operation is publicity. Thomas Hobbes, the seventeenth-century philosopher, said: "Whoever has the legislature or supreme power of any commonwealth, is bound to govern by established standing laws, promulgated and known to the people, and not by extemporary decrees." Have widely-known "established standing laws" any advantage for the private admin-

istrator? They have, for one thing, the effect of putting the executive upon his mettle, by bringing home to him the seriousness of what he is doing. One of the most effective ways by which an administrator can attain consistency is to hedge about his important actions by a certain formality and publicity, which recalls him to a full consciousness of what he is doing. Out of the habit of considering the bearing of specific acts upon the general program, some sort of a philosophy of administration is sure to grow.

Another advantage of "established standing laws" is that they meet the full force of public opinion. They exterminate false rumors, draw the fire of critics, attract positive contributions of value, and give a favorable impression of strength and fairness.

There is an intermediate scale of co-operation, larger than the personal form, and yet not nation-wide. It is illustrated in the informal working together of a number of persons (as a profession), or institutions (as a trade), for such objects as the fixing of standards, the regulation of fundamental conditions, the performance of valuable but non-profit-bearing undertakings, and the establishment of a reasonable and mediating

temper of mind. Science and industry are at opposite poles in the use of this type of joint action. Science uses it to a marked degree, industry but little. In science the rule of publicity of all improvements and discoveries is supreme. Each individual strives to "clarify his notions by filtering them through other minds," as Samuel Johnson advised. Each is proud to have stimulated others, and each builds on the work of others. Scientific standards are maintained by means of societies, which bring out the ideas of the best minds, and harmonize the results. The common use of like research methods, and apparatus, and terminology is considered, in science, simple common sense.

The great enemy of co-operation, in all of its forms, is competition. In industry the half-truth, "Competition is the life of trade," still circulates from mind to mind without its qualifying clause, "Where trade is in the hands of indolent or dishonest persons." Industry is so weakened by the losses of internecine warfare that it tolerates such inefficiencies as unstandardized accounts, unnecessary duplication, useful facts smothered as trade secrets, perpetual dispute as to fundamental principles, unstandardized and un-

reliable vocabulary, meaningless variations in merchandise, and colossal wastes in distribution.

The possibilities of individual enterprise have been pretty thoroughly mapped out by the last generation of business executives. There still remains a new world of welfare to explore through group enterprise. When our captains of industry shall be broadened to take pride in the achievements of industries and cities and regions (as now occasionally happens when a city rebuilds after a fire, or a local exposition is being promoted) much of the energy now lost in competition will be saved for useful work.

The Correlation of the Arts and Sciences

Culture, the sciences, and the industrial arts are stimulated by much the same conditions. In the seventh and sixth centuries B. C., the conditions which aroused the Greek settlements led almost simultaneously to the rise of industry, the fine arts, and systematic thinking. In the Italian Rènaissance the new ideas derived from contact with the East in trade, and with the ancients in culture, produced not only the merchant-princes of Florence and Venice, but also the artists, and

the pioneers of science. In America, today, conditions resemble those which existed in the periods just mentioned. Here there is not only boundless opportunity, but the old-world traditions which would have closed these opportunities to the masses have been broken. Here the contrasts between rich and poor are so sharp as to awaken even the dullest minds to the drama of life. Inasmuch as people are aroused in proportion as that which they desire seems attainable to them, a bold and even audacious courage prevails; talent is keenly appreciated, and an immense fund of energy is released.

The first result of this energy is a stupendous industry. The next results of it will be in America, as in Greece and Italy, a great science and a great art. Modern America, indeed, represents a new Renaissance, now in progress.

This Renaissance differs, however, from those springtimes of thought which have gone before it in history, by reason of its democracy. It is marked by the large proportion of the community taking part in it, and driving it forward. This democratic characteristic signifies that our science will be in a special sense directed to the task of

revolutionizing and perfecting industry, which is the basic activity of society, and the chief expression of the life of the masses. It signifies also that our art and culture will be, in an unusual degree, permeated by a sense of social service, and will be specially devoted to the work of redeeming industry from drudgery and brutality.

Persistent Thinking as the Universal Solvent

The administrator who neglects to apply the rules of scientific thinking to his affairs, and who does not exercise the highest reason within his grasp, sees things flat, without perspective of relative importance, derives few suggestions, contradicts himself without knowing it, makes difficulties where there are none, mistakes the point, misconceives opponents, perpetually arrives at knowledge too late, needlessly repeats corrected faults, is obstinate when he thinks himself steadfast, inconsistent when he makes concessions, and most excites the contempt of superior minds when most confident of himself.

The administrator who conceives his problems in an intellectual way, and uses observation and thinking as his universal solvents,

establishes a knowledge of fundamental principles, approaches constantly toward accuracy and comprehensiveness, and establishes the habit of ascertaining things at first hand. Such a man cultivates self-command, application, and respect for sincerity. He grows in attentiveness to allow no fallacy or confusion to slip by, in tenacity to leave out no logical step, and in courage to acknowledge difficulties frankly, while yet believing that a law exists.

If science is the accumulated truth which reason has discovered, administration is the art of bringing action under the control of reason. It is only through an efficient use of his mental resources that an administrator can succeed in putting each individual where his highest qualities are used, in establishing logical relationships, in bringing the inferior under the helpful leadership of the superior, in providing immediate, complete and accurate records, in elucidating orders, in preceding action by due deliberation, in unlocking the energies of men by ennobling their conceptions of their tasks, and in establishing a rational system of rewards and punishments. All these administrative problems are problems of thinking. In seeking

their solution, the administrator seeks simply to penetrate every part of organized action with the illumination which proceeds from the intellect.

Intellectual Courage

One must learn, must practice persistently, even fight strenuously, for the right to bring all his powers to bear upon his life work, to exercise all the abilities of his mind, all his sympathies, his feelings and knowledge, unabashed by decorum, literality, and philistinism. Thus forcefully did William James, in one of his essays, emphasize the bravery required for first-class thinking. This is a statement of the great truth, so often emphasized by Fichte, Varnhagen, Emerson, and others, that the root evil of life is cowardice, and the basic virtue bravery; bravery to make all vital decisions in perfect honesty and seriousness, and to bring to bear upon them all the powers of one's personality.

Opposition to the evolution of scientific industry is to be expected from many sources: from laborers caught in the fallacy of a universal over-production, who conceive that there will not be enough work in the world to go around; from officials who fear for

their positions; and from scientists who are not pioneers upon the present frontiers of science. When one speaks of industry as a possible fine art, he must count upon the inertia of those for whom culture means no vision of social good, growing into reality through sacrifice, but signifies the mark of a complacent Brahmin caste, pluming itself on its superiority. The champions of the vested interests of the world of culture tend to be blind to the beauties of the new and more democratic ideals, which most need champions, and the appeal of which fills the heart of the reformer.

The crucial difficulty in every advance in the world of action, as in the world of thought, is undoubtedly to unlock the mind of man and, by dismissing the phrase, "It cannot be done," release human energies, so that a fair trial may be made. It is to this point that the plaintive closing sentences of Santayana's "Life of Reason" return:

> The darkest spots are in man himself, in his fitful, irrational disposition. Could a better system prevail in our lives, a better order would establish itself in our thinking. It has not been for want of keen senses, or personal genius, or a constant order in the outer world, that mankind have fallen back repeatedly into barbarism and superstition. It has been for want of good character, good

example, and good government. There is a pathetic capacity in men to live nobly, if only they would give one another the chance.

Over this difficulty of making trials on faith, it is the supreme mission of exceptional men to help the world of ordinary minds. An ideal is not something to contemplate, but to attempt. To attempt it is to gain a momentum toward it, which makes it seem nearer and more real. In the measure that we achieve an ideal for ourselves, we begin to think it possible for others.

THE ADMINISTRATOR AS A DIPLOMAT

Chapter X

THE HISTORY OF THE GENTLEMAN-ADMINISTRATOR

IN the present state of industry many kinds of persons are trying their hands at administrative work. It is the privilege of the capitalist in a capitalistic régime to nominate himself to whatever position he chooses. In the ranks of administrators there are to be found men who have been drafted in because they have invented a new process or designed a package, or because they understand machinery, or corporation law, or have inherited a going business. When we come to know more of the science of administration, and when public opinion shall demand a more scientifically planned economy, it will commend itself to reason as an efficient practice to put into administrative positions only

those who understand the art of handling men.

Administration and Human Nature

Administration is a form of negotiation or diplomacy. The stuff with which it deals is human nature. The executive is not only called upon to provide an administrative framework of defined positions, and a body of rules governing operations, but to transmute his ideas into conviction in the minds of others, and to vitalize others by his energy and sympathy. He must breathe the breath of life into his creation. To this end he has need to be a judge of men, gauging their abilities and acquirements as they are revealed by language, intonation, expression, features, cranium, build, posture, habit, and all the works of their hands and minds. He must ascertain the prejudices and sympathies of his men, find the grooves in which habit makes their action easy, and divine the interests and ideals which can be relied upon in elevating their thinking and energizing their wills.

Knowing human nature, the administrator will understand why the esthetic and moral impulses everywhere interlace with economic

motives in sound and permanent forms of industrial activity. He will have the courage to put into the management of practical affairs a new and more refined calculus of pleasures and pains, because he has the imagination to conceive what an outpouring of repressed and chafing energy there will be when men are led by executives who understand and esteem men. For him an organization will be, first of all, a body of human beings sustaining each other with sympathy in a process of self-expression.

Sources of Knowledge

Among the sources from which the industrial executive can secure a knowledge of the diplomatic aspects of administration, in addition to his own intuitive powers and the life histories of other industrial leaders, is the experience which society has accumulated in the conduct of non-economic forms of organized effort. There are general principles of administration which underlie politics, economics, ecclesiastics, diplomacy, military strategy, and all other forms of associated human action. Each department of experience can yield knowledge of profit to the others, for each can elucidate the working of

certain forces which are everywhere present, but are peculiarly clear and significant in it.

In military history, the administrator can see exemplified the Spartan virtues of decision, discipline, despatch, concentration, and preliminary preparation. From it he can learn the physics of handling men in masses.

In like manner, from the record of diplomacy, and the study of the conceptions which society at various times has formed of the ideal gentleman, the administrator can learn the function of manners, the subtle efficiency of tact, and can observe the bearing of esthetic and ethical forces upon economics. From such sources he can secure guidance in the delicate art of handling men as individuals.

It is the recognition of these bonds of basic law, stretching from one life interest to another, and binding all together in a harmony, which has enabled all great administrators to understand each other so well. "A master likes a master," says Emerson, "and does not stipulate whether it be orator, artist, craftsman, or king." Likewise, in the "Ballad of the East and West," Kipling sings:

—"there is neither East nor West, Border, nor Breed, nor Birth,
When two strong men stand face to face, tho' they come from the ends of the earth!"

History of Ideal Types

Let us make a brief review of what, in various ages, it has been thought a man should be, in the hope that it will yield suggestions of use in defining our ideas as to the place and function, the character and appropriate methods, of the industrial *entrepreneur,* or Captain of Industry, who has become so prominent since the industrial revolution. And this let us do, not in a spirit of criticism, but to the end that the business executive may become a better rounded and more reliable instrument of progress, fitting harmoniously into the social order, so that when his account is balanced with each of the precious interests and aspiring tendencies of contemporary life, he may be found to be a profitable servant of society.

The Pagan Hero

The ideal man of ancient times was a leader who wrought for the general good through the instrumentality of the State. A priest-king in Egypt, and an inspired prophet and

law-giver in Judea, he was frequently conceived by the Greeks and Romans as an orator. Doubtless the most dramatic form in which the power of the more refined graces of character can exhibit itself is the spell which an eloquent speaker can exert over a listening multitude. The States of ancient times were for considerable periods governed by large primary assemblies of citizens. These, in an age of imperfectly formed laws, and of well-nigh constant warfare, provided an avenue to power through the arts of the rostrum. The principal ingredient in the pagan ideal was the worship of patriotism. In Greece, where the State so greatly predominated, this led men to reason back from the requirements of the perfect State to the essential characteristics of the perfect citizen. The conception was rounded out by admiration for the skilful use of reason, and by the breadth and sanity of judgment which naturally followed from the Greek conception of beauty as balance, measure, or proportion.

In Rome the virtue of patriotism was of a more stern complexion, as if influenced by the continual military conquests. There the characteristics especially admired were self-

reliance, fortitude, serenity in trying vicissitudes, a stern simplicity, and ready self-sacrifice to avoid the humiliation of one's honor. The defects of this virtue were blunted sensibilities, a merciless treatment of the weaker, and narrow prejudice against the people of other countries and races. The gentleman of ancient times was a servant of the State. The gamut of virtue ran from the refined periods of a perfumed orator to the final act of a defeated general falling upon his sword to avoid gracing an enemy's triumph. But in all this range there was no greatness admired which was purely personal and self-seeking.

Pagan and Christian

The transition from pagan to mediæval thinking is marked by the introduction of Christian ideals, and the ascendency of the organized church. The Roman citizen, animated by the sense of human dignity, had cultivated a quick assertion of rights and a quick resentment of wrongs. The Christian priest, humiliated by a sense of sin, now sounded the depths of self-sacrifice and bodily mortification. The hordes of barbarian invaders who exterminated the martially in-

clined Romans, ignored the humble early Christian bishops, and permitted them to possess themselves of the administrative plan of the fallen empire, and organize their church upon it.

Learning also fell into the hands of the church, so that soon the story of ancient virtue was read only in monasteries where, viewed as a record of pagans, it fell coldly upon minds filled with the doctrine of human depravity, and cramped into a barren dialectic by the limits which religious dogma imposed.

So, therefore, within the precincts of the church, in the hermit's retreat, and in protected monasteries and nunneries, the image of the pagan hero faded into the background, and that of the Christian saint was installed as the personal ideal.

The Teutonic races, spurred forward by migrating hordes in the rear, and thrown backward by trained armies upon the Roman frontiers, were compelled to bend the full force of their tribal organizations to warfare. Their youths were trained to a hardy active life. Their courage and spirit were constantly fed by stories of exploits of the chase and the battlefield. They were proud of their

stature and strength, and were full of boasting and ferocity.

If the barbarian invaders in southern Europe took over the conduct of military and political affairs, leaving social and religious matters in the hands of the church, on the other hand, in northern countries, as soon as an orderly life was to some degree established, the pioneer preachers of the Christian faith appeared in every neighborhood. Thus everywhere were brought into contact in western Europe the gentle southern priest and the brave northern warrior. These two types curbed each other and wrought upon each other, through many a generation of silent or outbroken contest, until at last, in the crusades, the church found a vent for barbaric love of war in her service. In the crusades the union between the temporal and spiritual forces of society again became perfect. And so we have an era of achievement. The physical manifestation of the energy which this union begot was the conquest of the Holy Land; a far-distant and hotly contested region was won by an army of diverse races and poor discipline, under jealous leaders, and without the aid of modern arms, commissariat, or means of trans-

port. The spiritual or intellectual result of this union was the splendid conception of the chivalrous knight.

Elements of Chivalry

Chivalry preserved the active force of the northern chieftains, but directed it to unselfish and lofty ends. It combined strength with modesty and gentleness. It retained self-confidence, but forbade boasting. It cultivated the love of renown, but so refined the imagination that satisfaction could be found only in splendid exploits. It retained a love of conflict, but made mercy to the vanquished as much a test of character as the victory itself. It retained Teutonic chastity, but glorified it into the pure emotion described by Dante as "a love which withdraws my thought from all vile things." It retained the Gothic conception of loyalty and fraternity, but widened the group within which brotherhood was recognized to include all who named the name of Christ. Symonds says:

> Chivalry absorbed and organized not only much of the Christian but also a large portion of the old Teutonic spirit. The unselfishness, humility, forgiveness of injuries, indifference to worldly wealth, the chastity and purity of love which formed ingredients of the chivalrous ideal, were Christian. The adoration of women, the love of battles and

the feats of arms for their own sake, the scrupulous sense of honor, the obedience to laws, the truthfulness and loyalty to persons, the respect of knighthood as a form of consecration,—all these no less essential elements of chivalry were Teutonic.

In short, then, chivalry married the tender virtues of the Christian south to the rugged strength of the barbarian north.

The institution of chivalry arose toward the end of the tenth century. It was most vigorous during the crusades, most elaborate during the Wars of the Roses. It was robbed of much of its beauty by the ungenerous passions evoked in the French and English civil wars. Its honor was weakened by the sophistications of Renaissance policy. When, at last, standing armies made kings and commons powerful, and there was no longer any need of traveling champions of justice, armed with spear and shield, knight-errantry ceased to be. By the sixteenth century it was but a memory. The ringing horn on the hillside, the clash of combat in the road, and the applause of spectators in the tilt-yard, were heard no more. Men gave over romantic quests inspired by the Holy Grail, or a lady's glove, and hung their glittering armor as an ornament on castle walls. Knighthood disappeared into the shining mists of story and

song, leaving behind, in addition to its ideal so wonderfully compounded of strength and beauty, a habit of respectful behavior, a quick answerability for personal wrongs, a wealth of armorial bearings and mottoes and precedents for heraldry, and various orders of nobility and decorations of merit. It left also a pathetic longing in the human heart to see such another age of romance.

The chivalrous knight swore allegiance to God, his king, and his lady. He thus joined Christianity, loyalty, and love—religion, patriotism, and the arts. The vows of the knight bound him to renounce material gain, to preserve faith, to keep his word sacred, actively to protect women and all weak and oppressed persons, to seek glory through arduous exploits and noble conflicts, and yet draw his sword in no unjust quarrel. These vows gave consistency to an ideal of aristocratic conduct appropriate to serve as a code of morals for a dominating, vital type of leader, living in a disturbed and transitional age.

Results of Chivalry

The enthusiasm which the many-sided ideal of chivalry evoked with its galaxy of virtues,

may be seen, in literature, in the unfolding of the themes of the simple Aryan folk tales, and the prose romances of the twelfth and thirteenth centuries, into the sensuous beauty of Provençal poetry, and the delicacy and pathos of Petrarch and Dante. Chivalry embellished with romance the lives of its half-legendary founders, Charlemagne, Siegfried, and Arthur. It supplied the conception of virtue sung in Chaucer's "Pilgrimage," Malory's "Morte d'Arthur," and Spenser's "Faerie Queene." In the world of action, chivalry animated the crusades, dispensed justice throughout Europe for four hundred years, purified court life, and made much of the warfare of the middle ages peculiarly humane and noble. Its enthusiasm burned into brilliancy in such characters as Richard and Blondel, the Black Prince and his father, Tancred, Godfrey of Bouillon, Gaston de Foix, Bayard, and Warwick, and in a thousand forgotten commanders of the Templars, the Knights of St. John, and the Teutonic Knights.

Chivalry served to draw out and develop those free, bold spirits whose talents could not have been evoked by the disputations of the school-men, nor the mortifications of the

religious zealots. It created a romance of action to match the saint's moral paradise, and evoked poetry and the arts to celebrate its charms. The love of the beautiful which it begot caused a hospitable reception to be given in Europe to the refinements brought from the East by the returning crusaders, which caused the first slight stirring of international trade.

A great advance in decency, courtesy, and personal loyalty was made in Europe, through chivalry, between the twelfth and the sixteenth centuries. By permitting men to differ without brutality, a freer and more flexible movement of thought was made possible; and thus the temper of mind was prepared which permitted the old order of thinking to break up, and a new one to form which should be comprehensive enough to include the forgotten treasures of classical times, and the possibilities of the newly discovered west.

It created a friendliness and freemasonry among the ruling classes of Europe which so softened social and national antagonisms as to permit a merciful spirit to express itself ultimately in the unwritten laws of war, and in the practice of diplomacy. The knight-

errant's love of dangerous exploits transmitted itself to the "Shepherds of the Ocean," who discovered the new world and explored its continents. Through chivalry the glamour of the crusades was transmitted to the "banner of the cross" of the modern missionary field.

In England and France, where the knight exerted the greatest influence, there was developed that freedom and tolerance which the quick honor of the code demanded, that courage to attempt romantic things which its quests developed, and that habit of actively bringing one's ideals to bear upon the real world which its vow to deliver the oppressed involved. So was formed the basis of the modern conception of a gentleman. The consequence of the development of these virtues was that France and England were placed for a long period in control of the world, and in the van of civilization.

The Courtier

The formation of great political States in Europe at the close of the Middle Ages, and the establishment of the power of the monarchs throughout their realms, made it unnecessary that the knight-errant should

longer ride up and down through the land as the champion of those who were wronged. The introduction of firearms, and the growth of standing armies, made obsolete the mounted warrior encased in armor, and skilled in individual contests with the lance and sword. The administrative machinery of general government, for each country, became concentrated at the court of the monarch. The officers of the realm organized themselves about the person of the sovereign, on the model of a great household. As the page, squire, and knight of war-like chivalry disappeared, the chief men of the realm became grand chamberlains, grand almoners, provosts, officers of the guard, equerries, and masters of the bedchamber, the wardrobe, the pantry, and even of the hounds. The world of opportunity was not now chiefly the field of dangerous exploit, but the anterooms of the great, the royal hunting parties, and the petty courts of the favorites of the hour. Toward this world of opportunity, therefore, men of talent turned their thoughts. To the courts were drawn the leaders of the royal armies, the prelates of the church and vassal nobles more easily controlled as ornaments of court than as administrators on their own

estates surrounded by their henchmen. Court circles were completed by the various members of the royal family, representatives of foreign monarchs, and a miscellaneous crowd of soldiers of fortune, scholars, artists, and agreeable men and women in waiting.

These persons were brought into an intimate daily contact which gave unusual importance to tact and the graces of personal intercourse. "In acquiring talents adapted to tranquil times," said Taine, "men lost those suited to times of agitation." The knightly virtues were exchanged for the courtly ones. But if there was now less emphasis upon physical stamina and the military virtues than in the days of chivalry, there still survived from that period a high-spirited honor, a scrupulous observance of the personal rights of others, and many graceful formalities and traditional expressions of deference.

Great power was now concentrated in the hands of a few persons, so that even the destinies of States were decided by dynastic and personal alliances and antagonisms. The energies of court circles, therefore, found expression in an elaborate subtle game, the object of which was to win personal influence.

Every conversation, and even every recreation, might become pregnant with possibility, if the great ones were present. A look or a word might ruin a cause; the friendship of a relative or a favorite might insure a career. Under such conditions, manners, which should take a position as the minor morals of life, were emphasized at the expense of more noble virtues.

An entirely new element in court life, not present in the age of chivalry, was introduced by the revival of learning. The Renaissance was an awakening to the joy of life, and to a new curiosity with reference to the physical world. Brought about by the revival of classical learning and the discovery of the new world, its rise reinaugurated scientific study, and stimulated literature and the fine arts. The invention of printing, and the introduction of paper helped to spread broadcast in polite society reproductions of the ancient classics, while the humanists presented themselves at court as teachers, lecturers, poets, and arbiters of taste in speaking and writing and in all matters involving the arts.

We may, perhaps, distinguish three elements which united to form the court ideal

of life in the sixteenth, seventeenth and eighteenth centuries; the virtues of the knight *sans peur et sans reproche* inherited from chivalry, the accomplishments of scholarship and polite learning introduced by the humanists, and the sinuous practices of an elegant but unscrupulous diplomacy, to which the conditions of court life gave birth. In so far as these elements were capable of being harmonized, they made up the conception of what the ideal courtier should be. In Edmund Spenser's "Faerie Queene" we have this character presented as conceived at the court of Elizabeth, the emphasis being placed upon manliness. In "Il Cortegiano" of Castiglione, the ideal of the Italian court of the Duke of Urbino in the early sixteenth century is presented, with the emphasis upon culture and the graces. At his best, as illustrated, let us say, by Sir Philip Sidney, the courtier was a sort of knight with armor laid off, bending himself to the delicate negotiations involved in the new scheme of highly centralized personal government. The courtier was more gentle and more graceful than the knight, and perhaps better balanced and more restrained. His temper was more flexible, and he was better educated. He gave more

attention to self-control, repressing temper, melancholy, and all ungracious actions, in an effort to please; and he coached himself more constantly to remember the likes and dislikes and the interests of others.

But he was in an atmosphere unfavorable to many of the manly virtues. The ideal of the courtier suffered a rapid deterioration. The elaboration of the material side of life, through the attention paid by court circles to equipages and palaces and garments and costly functions, fired the ambition of aspiring men everywhere in Christendom to obtain wealth. While this undoubtedly stimulated industrial development, it contributed not a little to the ultimate decline of the courtier into the mere man of fashion and dandy. The Renaissance introduced many vices which fastened themselves upon the idle privileged classes and, in England, led to the revolt of Puritanism, by which was set up an unfortunate opposition between the graces and the virtues. Italian intrigue gave to statecraft a sinister turn. Irresponsible power produced an autocratic *haute diplomatie* which lingered in conflict with democratic ideals and persisted at least until Metternich's time.

The emphasis placed on birth barred out much talent. The narrowing of the range of interests made the court circle incapable of anticipating the forthcoming social movements, and of adjusting itself to them. At last, the demand of the people for political power placed the whole group in the light of usurpers, and deprived the courtier of the stimulus of general admiration, and of the force of his own good conscience. And thus the heart was taken out of the court conception of what a man should be. There was soon left only a shell of genealogies, formalities, and clothes. A great decline in nobility of character is visible between the court of Elizabeth and that of George II.

"Aristocracies," says Matthew Arnold, "those children of established fact, are for epochs of concentration. In epochs of expansion, aristocracies with their natural clinging to the established fact, their want of sense for the inevitable transitoriness of all human institutions, are bewildered and helpless."

The Gentleman

The next movement therefore is a democratic one. After the era of revolutions had

established popular governments, the responsibility of leadership, which once rested with the few, devolved upon public opinion. A new range of rights and duties was opened to the citizen. It will be observed that the conceptions of past ages were ideals of leadership. The orator-patriot was a leader; so also were the knight and the courtier. Now that we have reached the age of democracy can there any longer be an ideal of leadership? It has been said that many steps in progress have had a leveling effect. Gunpowder abolished certain inequalities between fighting men, printing leveled learning in certain ways, transportation brought traveling men nearer to equality, and the telegraph made communicating men stand more nearly upon a plane. But leadership has not thereby been destroyed. On the contrary, these inventions have increased the number of departments of human effort which offer scope for the exercise of great powers of leadership. The duty of leadership has been laid upon a vastly greater number of persons than ever before. The inventions above referred to have made scope for scholars in the control of the fecund press, for statesmen to fix the transportation rates which

shall determine the circulatory system of the nation's industry, and for men of culture to say what is worth while as telegraphic news. Machine processes of industry have brought into existence vast industrial interests which call loudly for men of the highest character. "What becomes of the gentleman in an age of democratic equality?" asks Crothers. "Just what becomes of every ideal when the time of its fulfillment has come. It is freed from its limitations and enters into a larger life."

Curiously enough, the democratic ideal is the most complex. Each ideal in the sequence of history has naturally enough been more complex than its predecessor, for it has added, to the elements carried over from the old, the new qualities evoked by the need of the times. The conception of the gentleman contains elements derived from all the cultural enthusiasms which have preceded it. This complexity emphasizes the sovereign importance of balance and due proportion. A gentleman is one who gives to each worthy aim of life its rightful consideration. He pushes those things into the background which belong in the background. He is one who will not permit "raw haste, half-sister to

delay," nor disfiguring intensity in the pursuit of a few ends, to leave him a spiritual pauper in other departments of his nature. With nothing in excess, and nothing forgotten, he sees life as a whole and plans to make a harmony of it. The relation of balance of character to administration is clear. The man who cannot administer his own talents, and establish harmony in his individual character, gives poor promise of introducing due proportion and smooth co-operation into the labors of others placed under his control.

The question has often been asked: "What is it to be a gentleman?" Thackeray, who asks it in "The Four Georges," answers, "It is to have lofty aims, to lead a pure life, to keep your honor virgin, to have the esteem of your fellow citizens, and the love of your fireside; to bear good fortune meekly; to suffer evil with constancy; and through evil or good to maintain truth always!" Huxley chooses as the essential qualities, thoughtfulness for others, generosity, modesty, and self-respect. Newman, in his "Idea of a University," gives a wonderful catalog of the virtues of the gentleman, in which the functions of kindliness, modesty, fairness, and tolerance are trenchantly set forth.

In personal intercourse the gentleman "sedulously attends, pointedly asks, calmly speaks, coolly answers, and ceases when he has no more to say." He makes few apologies, knowing that many are futile. He is sparing in the use of criticism, satire, and ridicule; but on occasion employs them with a convincing candor. He is tolerant of abuse, as one who knows the force of the passion which it expresses; but in his own speaking aims not to make truth offensive by excess of force. In argument he strives not more to convince the intellect than to win the heart, knowing too well the value of a friend to sacrifice one for a triumph in debate. He is hampered by few aversions, by rare resentments, and by no jealousies.

The heart of a gentleman is hospitable to new friends. He makes acquaintances without precipitant confidences; and his friendships are not cut to the pattern of his interests. He possesses the sympathy born of much experience; and from kindliness of heart, as well as acute perception, attains the virtue which is the twin-sister of excellence, namely, the appreciation of excellence in others. He avoids dissimulation as the weak policy of those who are overmatched by cir-

cumstances. He does not need to boast, for he has curbed his appetite for praise until he is content with that recognition which flows naturally from his achievements. He understands the endurance of cheerfulness; and prizes the beauty of unpublished charity.

A gentleman possesses the harmony of nature which, "suiting the action to the word, the word to the action," is able to attain address without loss of more sterling qualities. He judges himself too justly for presumption, and others too accurately for diffidence. By avoiding the impetuosity of youth, and the avarice of decrepitude, he prolongs the golden age of life. Through his restraint there is expressed a reserve strength which sustains admiration as by a perpetual promise of new revelations of moral beauty.

A gentleman is one who is endowed with generous impulses, a sound understanding, and a firm will; he has taught himself the nature of the human heart; he is moving through the world in the company of splendid ideals, for whose realization he ever hopefully and joyously strives.

Present Need of Leadership

There is a degree of similarity between the juncture now prevailing with reference

to ideals of conduct, and certain transitional periods of the past when old models were disintegrating and new ones forming. In the early middle ages the delicate ideals of Christianity were brought into contact with the ferocity of the barbarian peoples. At first the refined spirits of the Church shrank into seclusion, cultivating self-perfection while they awaited the end of the world. But when finally a zeal was awakened within them to carry their gospel to the northern peoples, and to this zeal was added system and diplomacy, their efforts were crowned with success. Not that they made many hermits and recluses; they did not, human nature be thanked. But, by coming into a vigorous and intimate relation to life, they caused the Christian virtues to unite with the prevailing secular ideals of the northern races, and formed that beautiful composite of characteristics which graced the chivalrous knight.

An analogous process of integrating diverse social interests is now under way. The Puritan movement, which for a long period parted religion and culture as co-operating social forces in English-speaking countries, was followed by the Industrial Revolution which served to carry ethical and economic

thought apart. The Reformation withdrew the emphasis from the social law and placed it upon the individual conscience, but the Industrial Revolution made the individual appear as an insignificant atom in great national and international adjustments of supply and demand. It applied to him the scourge of a new competition, offered him the secrecy of producing for a distant market under cover of the corporation and, through the philosophy of natural liberty, bade him follow his self-interest.

Likewise, culture and industry for a time drew apart, the one looking ever backwards and over-valuing literature, the other looking ever forward and over-valuing action. The new system of manufacturing and commerce served to rearrange communities geographically on the basis of their interests. The trades were carried out of the households and villages, where the general intelligence of the community had kept vigilant eye upon their practices, and were concentrated in regions of coal and iron, and in the industrial quarters of cities, temporarily out of the vision and thought of the liberal professions and the landed families and the universities.

But now the interests of society are again beginning to react energetically upon each other. If a new synthesis can be made which will bring the various forces of the community into harmonious co-operation, as in the age of the crusades and the cathedrals, another period of great achievements may be ushered in. Religion, now no longer so certain of the accuracy of its knowledge of a future world, is concerning itself more with present social problems; while industry has had long enough experience with the new order to perceive the reality of the results of the long-run, and to turn to the causes of individual efficiency. Likewise, culture, better informed of the world's present life-process by modern agencies of news gathering, is ashamed of literary dilettantism; while the Captains of Industry, having shown secret aspirations by post-mortem endowments of socializing institutions, are giving way to a generation of college men in business who reach forward more boldly to a new chivalry of generous living leadership.

The age is full of opportunities. Industry awaits the administrator who shall be all that a gentleman should be; efficient but humane, adroit but honorable, a lover of his fellow-

men as well as a leader of them; and who shall use his power with gentleness, and his wealth with imagination, and shall illuminate the world of private property with light from far-away interests of the heart.

Such an administrator will, indeed, assert his driving power and mastership, and will take care to insure discipline or the spirit of sacrifice, which is essential to all successful organized action. But he will not rest content with that blind, mechanical, and sullen discipline gained by coercion. He will move upon a higher plane of efficiency to evoke true loyalty, that infectious nobility which spreads in the ranks in response to nobility in the leader.

Nor will such management now be unprofitable. One of the characteristic movements of progress is the spread to wider and wider circles of society of that delicacy of intuition, and that sensitive self-respect, which formerly prevailed only within the most favored circles. More and more, men and women in the ordinary walks of life are being leavened with culture, and are becoming sensitive to discourteous treatment, observant of the causes of human suffering, appreciative of beauty of environment, and responsive to the

appeal of high ideals. This advance compels the administrator to exercise a progressively strict restraint in the choice of means, and to calculate ever more seriously the justice and spiritual value of his final aims. There exists much inefficient management which is so because it has not observed how refined the public schools have made the young men and women now entering stores and offices, how responsible the colleges have made those graduates who are working toward managerial positions, how scientific the engineers have made the technical staffs, how proud and independent the economic agitations of recent years have made workmen, and how discriminating modern periodical literature has made the consuming public.

The common thought will endorse bringing the various interests of society more intimately together in a union which may be still called by the old name, "carrying on a business." It will endorse leadership which recognizes, as a part of sound practical business policy, efforts to improve the relation of the school system to industry, to adjust industrial effort to a proper recreative program, to give esthetic considerations weight in planning industrial equipment, or to make

revisions in our obsolete code of industrial ethics. It is characteristic of the gentleman that he firmly interlaces the interests of life. He works through larger correlations than the ordinary man, for his comprehensive and well-balanced knowledge gives him a greater faith. The gentleman-administrator will aim, therefore, to bring the loose ends of society's labors together, and perfect a working harmony between the creative forces of his age.

The Captain of Industry

The captain of industry is the logical successor to the knight and the courtier. "The leaders of industry, if industry is ever to be led," says Carlyle, "are virtually the captains of the world; if there be no nobleness in them, there will never be an aristocracy more." Homer called Agamemnon the "Shepherd of the People," because he organized them so that they wrought great things. The modern executive whose function it is to move men's minds in economic affairs may, if he will, be a shepherd of his flock in many pastures other than those in which the daily bread is gained. There may be some excuse if others build up little private paradises, and cherish in a timid secret

way some aspiration toward the beautiful which is too weak to reach further than a collecting mania or to touch more lives than those of wife and children; but the administrator is by instinct a leader, by right of ability a law-giver, and by virtue of position a general model of conduct. How shall the administrator, who has no great unselfish aims, be excused, whose function it is to guide the daily thinking of others, and whose talent fits him to organize the efforts of others, and give to them balance and proportion as parts of a general plan? How shall his name get into the roll of great leaders, if he administers only for himself, and lets the world go on its way unrefreshed and unennobled through his talent?

Chapter XI

THE METHODS OF THE GENTLEMAN-ADMINISTRATOR

A POINT of view for judging the methods appropriate to the gentleman-administrator may be gotten by starting with the fact that the conduct of affairs is chiefly a matter of managing human nature. The principles of administration are in large measure simply approved ways of convincing the human reason, of arousing the human will, and of protecting human nature against its own weaknesses. To obey the laws of human nature means, negatively, to limit one's aims, as Cæsar did, to what is practicable. Positively, it is to steer such a course toward a chosen aim as will arouse the greatest preponderance of favorable forces.

The nature of the "calculus of diplomacy" may be illustrated by an observation of Machiavelli that "It is a mark of great prudence in a man to abstain from threats or any contemptuous expressions, for neither of these weaken the enemy, but the one protects him by making him more cautious, and the other strengthens him by exciting his hatred, and a desire to revenge himself."

The Study of Human Nature

The beginning of diplomacy in administration is, therefore, to become a student of men.

Most of us form our general opinions of persons with too great haste and, having formed them, we modify them with too great reluctance. The diplomatic person is one who has the instinct for the observation of points of character, and who persists longer than others in such observation. He excels in watchfulness to correct his impressions, so that his policies may be modified constantly by easy transitions, rather than occasionally by harsh reversals. He observes those matters which illustrate the force of habit, or the flexibility of a well-trained will; and probes out the few central notions which, in most men, govern conduct. In a company of persons, he observes the signs by which natural leaders betray themselves, and by which others admit their leadership. To him there are two languages; one of words denoting concepts, the other of signs revealing character. To the testimony of social intercourse he adds that of deeds, studying their times and sequences, their force and continuity, their precision and appropriateness.

Into comparison with character he brings reputation, judging both by practical ideals.

Elements of Efficiency

Diplomacy is good economy because it seizes opportunity. It is wary enough to forego many advantages, but too experienced to wait for all circumstances to become favorable. The study of human nature prepares the administrator not only to utilize opportunities, but to see them afar off, and time their arrival. Opportunity is an exceptional degree of harmony between talent, project, and circumstance. More precisely stated, it is an advantage more valuable than the present worth of the chance of any future superior advantage which competes for the attention of the same talents. The diplomat keenly realizes that the utilized opportunities of a life tend to arrange themselves in series, both ascending in value and increasing in frequency. He, therefore, flexibly lends himself to small matters which those persons ignore who have forgotten the fable of the camel's nose.

A second secret of the efficiency of diplomacy lies in its following the line of least resistance. There is a kind of indirect ap-

proach in dealing with the forces governing thinking and feeling, which is analogous to the round-about productive process of capitalistic industry. Such a course may be illustrated by the policies of Lord Kitchener in Egypt. Finding that the male population of certain districts was giving trouble to the local police by its lawlessness, he arranged that the hated draft for the army should fall most heavily upon these districts, so that the State might utilize this valor and energy. The effect was a prompt competition between districts to see which could be most orderly. To the request of the Egyptian government to be allowed to send troops to the aid of Turkey he replied favorably, but made it plain that since Egypt could not be left exposed, an equal body of English troops would be brought in, at the expense of the Egyptian government. No troops were sent out.

The diplomat aims rather to mould men in the origins of their convictions than to subdue them in the full course of their actions. He draws others toward his conclusion step by step, through a series of easy transitions. He does not press his point, and he never commits the folly of celebrating a triumph which intensifies to another the personal ele-

ment in defeat. He economizes severely in the number of independent decisions he requires from others, working through natural leaders, taking advantage of habit, and presenting new matters as corollaries of old. Diplomatic management aims to set up such an economy of effort among psychic forces as engineering does among physical forces. Like engineering, it uses one force to correct or neutralize another, producing such an equilibrium of divergent tendencies that, in directing affairs, the influence of the administrator suffices everywhere to make a preponderance.

Another secret of diplomacy is that it makes a perfected work of whatever it undertakes. There is in industry much bad management which patiently enough bears the heat and burden of the day, performing the monotonous or arduous duties which constitute the bulk of so many matters, but which always stops a little short of roundly-finished and satisfying work, firmly fitted into its place, understood, and heartily accepted. The administrator who provides equipment, organization, and technical skill and then, from lack of the personal graces, alienates others and misrepresents himself, is similar

to the farmer who performs all the field labor necessary to produce crops, but who, for lack of a little cleanliness and taste in the final grading and packing, receives but half the price.

The undiplomatic man makes a long journey and offends his host on the steps; trains an apprentice and loses him at the beginning of productive years by a sharp word; builds a structure and leaves it hideous for lack of an extra foot on the cornice; brings a group of negotiations to a final conference and sticks at a minor point. Such a man prepares for a position and expects those with appointing power to know his fitness by divination; he labors earnestly to prepare a plan but presents it stiffly with a "take it or leave it" air. Diplomacy has a passion to complete its task as a work of art, and it takes the necessary infinite pains up to the very end. It realizes that all affairs begin and end as psychic states;—end as a state of satisfaction in some person or group of persons. It does not neglect, therefore, to humanly interpret its results to the minds and hearts of men, and to win for them attention and friendly consideration as forerunners to acceptance.

Due Form

It is a necessary part of the economy of any art or craft to preserve the devices, policies, principles, and even the points of view and ideals, which experience has established, in order that talent may not unduly waste itself in reproducing what has already been created out of the void, by past generations of masters. In the fine art of conduct, due form is the established technique which, under ordinary conditions, is not to be changed, except by those who first prove their talent by its mastery. The conservatism of society is a sound instinct to protect the costly gains of civilization against the rude hands of plausible leaders or fanatical minorities. It is a kind of temporary veto which appeals all matters to time and the majority.

There is always in the world a class of impatient persons who possess the energy to accomplish results with crude and self-taught methods. But if these persons were allowed to break down the traditions of the arts or crafts in which they work, society in the end would suffer more than it would gain, by reason of the loss in efficiency of the great majority who can only make their contributions by following the best methods. There

are, of course, exceptional cases when an individual contribution is so great that the confusion and bad precedent which the manner of it introduces into the world of methods must be overlooked. But when the mature consideration of the best minds does not approve an exception, the observance of due form means usually to bow to the wisdom of not rendering an immediate, local, and tangible service at the expense of a greater subsequent, though possibly imperceptible, injury.

Furthermore, it must be remembered that the highest talent follows good method by instinct. "Every great man," said Bulwer, "exhibits the talent of organization or construction, whether it be in a poem, a philosophical system, a policy, or a strategy.—And without method there is no organization nor construction." More pertinently and compactly Goethe says, "Genius is that power of man which, by deeds and actions, gives laws and rules."

One of the uses of proper form results from its availability as a tangible sign in classifying men and their undertakings. As a symbol of talent, or a password, or badge of class, it is useful when the circumstances will not permit the essence of the talent to

be more definitely proved by performance. "Ceremony," said Steele, "is the invention of wise men to keep fools at a distance."

This use is the recognition of the convenience, not to say necessity, of bringing external symbols into harmony with essential realities. A stock illustration of the idea is the case of an officer who must in his person represent the dignity of an organization, or a profession, or a country. Cromwell permitted the formalities of State to proceed undisturbed, even though they involved him to his discomfort. George IV offended many, even in the act of making friendly advances. Lord Dudley, commenting on him, said, "Drinking toasts, shaking people by the hand, and calling them Jack and Tom, get more applause at the moment, but fail entirely in the long run." It has been said that "an ambassador is a spectacle." In this sense, a king is an ambassador of the state to his own people. (Every man should consider his manners as the ambassadors of his talents.)

A similar function of form is to bring incidentals into harmony with that which is principal. No man who becomes a model in one line of action can prevent being taken as a

model in many other lines. So strong is the tendency to consider every leader as superior in all departments of life, and so as a universal pattern, that whoever steps out in advance of the crowd, and makes himself an example in any given thing, cannot avoid the responsibility of regulating his entire life with a new scrupulousness, not only to avoid doing his followers and admirers and imitators an injury through his incidental leadership, but to prevent the rebound of that injury upon himself from working a destruction of his usefulness in the true field of his leadership. Form is, therefore, on its highest plane a kind of conscience or circumspection in the great, to avoid harming others by the force of example.

If form is capable of becoming a safeguard against the erratic use of the power of the great, it is to be expected that it will owe its rise and binding force not only to the will of the governor, but of the governed as well. Every executive finds his power censored and bounded by this unwritten law of form or custom or propriety. Springing from the minds of the governed, it invests him, without his volition, as a yielding, deferential and somewhat indefinite but, nevertheless, a

finally serious and determined cloud of limitations. We have already quoted Steele's pungent phrase, "Ceremony is the invention of wise men to keep fools at a distance." We may now reverse this and say, ceremony is the invention of wise subjects to keep their governors from foolish actions.

Courtesy

In answering the question, who is the happy warrior, Wordsworth says:

> 'Tis he
> Whose powers shed around him in the common strife
> Of mild concerns of ordinary life
> A constant influence, a peculiar grace.

"The virtue of any action," says Seneca, "lies in the intent, the profit in the judicious application of means, but the beauty and ornament lie in the manner of it." Courtesy or tact or gentleness has been defined as generosity in little things. Not only is it "benevolence in trifles," as Chatham said, but it is also such a benevolence in the great things, which may bring glory, that attention can be spared from them for the simple elements of daily life. It has been slighted as petty because it deals with trifles, but its special function is to rob what it touches of pettiness, by deal-

ing with it in a noble spirit. It is, indeed, most beautiful as a virtue of strong natures, for in them it is free from the suspicion of interest. Whatever courtesy may lack, in the significance of the individual acts, is compensated for by the constancy of its operation for, as Burke said, "The law can touch us here and there, now and then. Manners are what vex or soothe, corrupt or purify, exalt or debase, barbarize or refine, by a constant, steady, uniform, insensible operation, like that of the air we breathe in."

As a sort of statesmanship in dealing with details, tact is of importance in administration, for administration is but in small part made up of the management of heroic attacks, desperate defenses, and sudden and decisive climaxes of success or defeat. It is much more the flexible bending of the will to one detail after another, the eliminating of a small loss here and a small uncertainty there, the daily stimulating of others by deference and just praise, the guidance of others by innumerable unobtrusive hints, and the constant removal of the small differences which lie in the way of united action.

One of the secrets of the efficiency of tact lies in the fact that it is the expression of

sympathy. Beyond the pressure of necessity, and the requirements of an established standard of living, the great animating force which sustains men in every kind of work is sympathy. Not only does it come as a welcome testimony to those who are convinced of their own merits, but it acts as a stimulus to arouse the discouraged to use the talents others see in them. To feel understood and esteemed is to feel yoked up with all vigorous useful men, harnessed to the world's great problems, and to be certain that one is pulling in the right direction, along the road leading to an earthly paradise. The secret of saying "no," in such a way as to confer a favor, is to hear the suitor's story with so much sympathy and respect that his downcast and worried mind is eased, and he goes away with increased hope and vigor to apply elsewhere.

The severe, snappy, discourteous executive violates what Herbert Spencer calls the fundamental law of rhetoric, which is, "Economy of the recipient's attention is the secret of effect." Under the reassuring influence of a gracefully expressed sympathy, men feel easy, the cramping influence of fear dissolves, and the powers are released from

distrust and discouragement to a natural unfettered vigorous action. "Thy gentleness hath made me great," said David.

Courtesy is the tribute of manners to the merit of others. By disposing of the problem of the manner in which one is considered by others, it promotes ease of intercourse. When men who are in negotiation become reassured as to the personal aspect of their mutual relations, they find their affairs vastly simplified, for they are then able to banish all questions of rivalry and animosity, and confine their differences strictly to those which arise from the nature of the interests they represent. The reward of the courteous man is friendship and gratitude. His efficiency lies in part in the tribute he receives of the energy he arouses in others.

We might well, in this day of enlightenment, leave without debate the ancient question whether administrative policies are more efficient when based on fear or affection, but the subject connects itself with that of discipline. Machiavelli declared for the use of fear in the well-known passage of the Prince: "Men have less scruple in offending one who is beloved than one who is feared, for love is preserved by the link of obliga-

tion, which, owing to the baseness of men, is broken at every opportunity for their advantage; but fear preserves you by a dread of punishment which never fails." If Machiavelli had trod the streets of Athens in the time of Socrates he might have been answered by the sage as was Chærecrates: "You surely are not one of those men, are you, who think wealth more valuable than brothers, when wealth is but a senseless thing, and a brother endowed with reason, when wealth needs protection, while a brother can give protection, and when wealth besides is plentiful, while brothers are scarce?"

It may be added that as administrative methods rise or fall in quality with the nature and purposes of the governor, so they do also with the nature and spirit of the governed. The executive often does, not what he would, but what he can. Brutal punishments and a ramrod discipline were required to keep the army of Frederick the Great in order, for it was composed of mercenaries hired or kidnapped by recruiting officers in all the countries of Europe. Flogging was deemed essential in Wellington's army in Spain, while the English privates

worked for wages to protect a country they despised, against French armies they more than half believed were fighting for the rights of the common man. Such brutality was not required in the French republican armies, composed of men who eagerly sprang to the colors in response to the double call of the defense of the nation and the establishment of the liberties of the people. Nor was it required during the Civil War in the armies of the North and South which, with terrible determination, demanded of their leaders conflict again and again.

Fear may alone produce results with brutal or unstable natures, but with men who refuse to fear a nobler principle of union is needed. The discipline of fear is a poor substitute for the discipline of loyalty. The rapid advance of the masses of men, in all progressive countries, during this generation, into a new freedom of wealth and intelligence, is eliminating the industrial drive-master who bases his administration on the lowest stratum of human motives, just as in a preceding generation, a similar step in progress eliminated the slave-master.

Courtesy is a sort of overflow of energy. It is good measure of vital force in a man—

"pressed down, shaken together, and running over." It is the natural manner of the man who is abundantly able to meet the claims which his work lays upon him. It requires surplus strength to command one's talents to gracious action; the lack of the graces is one sign of nervous exhaustion. Some one has said, "Be polite; perhaps your family won't mind if you practice on them." The point of this is that to play the part of the tyrant is the over-taxed man's relaxation. It is the little fellow whose equilibrium is being constantly upset, either into insolence with his subordinates, or sycophancy before his superiors. A great part of the sarcasm and ridicule in the world comes from weak visionaries who have been upset by the force of things and have turned sour; turned into cynics. The really keen intellect gladly gives just praise, for it understands how much more useful is the discovery and encouragement of merit than the censure of defects. It is the character conscious of the abundance of its own merits which can afford to ignore them in the presence of others. Samuel Johnson once said, "All censure of a man's self is oblique praise. It is in order to show how much he can spare." The call to attain

efficiency by means of courteous and generous methods is in no wise a call to effeminacy, but directly the opposite. It is a call to win where the rules of the game are strict and one must win without a blow below the belt. It is a call to greater precision and elegance of means.

Compromise

"There is that scattereth and yet increaseth," says Proverbs.

Diplomacy presents the apparent miracle of perpetually deferring and yet advancing; of giving away and yet gaining. This illusion is due partly to the fact that diplomacy often makes its way by means of a succession of small steps in each of which something slightly more important is won, through something scarcely less important conceded. It arises also from the practice of trading off that which is personally more flattering, and temporarily more prominent, for that which in the end will possess more value for the essence of the negotiation. The master of compromises understands that most successful affairs are a process of adjusting things so that they shall be as people want them; and that the majority of people

want the immediate and the obvious and the personal advantage, and readily yield the success which is distant and abstract, to the one who will give them such an advantage.

Compromise is a dangerous game for weak men. Its tendency is to strengthen the strong and weaken the weak. It has the irksome indefiniteness and suspense of a "*politik von fall zu fall.*" For it is uncertainty which is the sting of responsibility. To play at compromise there is needed a perfect knowledge of what is essential and what is collateral, so that the spirit of deference and compromise may be constantly fed by giving way on the collaterals, while solid advance is nevertheless made in essential matters. Without this knowledge one is in danger of losing track of the balance of advantage, as the discussion winds from point to point, and will find himself unable to estimate the accumulated significance of his various concessions. Among men of the highest executive ability, it is amazing what a mass of secondary matters is taken for granted, or is settled in a spirit of generous compromise. "The gifted man," said Carlyle, "is he who sees the essential point and leaves all the rest aside as surplusage." It

may be said that the diplomatic man is he who sees the essential point, and uses the surplusage as concessions with which to win the point.

Compromise is, likewise, a hard policy for men of distrustful nature, who doubt the general prevalence of a spirit of fair play. By nervously watching for traps, they show that nothing is left to the honor of others, and so lower the moral tone of negotiations. Such men exhaust themselves in petty precautions, and yet without disarming the real opposition. By the tedious turnings and windings in which they hide their interest they provoke others to probe it out. Those who do not believe in others have not the imagination to conceive that when they are treated generously it can be in good faith; nor can they make such bold propositions as attract the special admiration of magnanimous men, and win the greatest concessions from them, by implying that they are magnanimous.

As compromise involves an advantage, first to one and then to another, it is an unwelcome policy to persons who cannot rest contentedly under a temporary appearance of being at a disadvantage. Those who are restless to distinguish themselves, in small

matters as well as large, and who, like children, must win every time, are not apt at negotiations. They will dislike to look at the arguments of others, for fear of having to accede; they will be loth to follow the suggestions of others, for fear of appearing to be led.

Just Proportion

We have advanced the idea that the characteristic virtue of the gentleman is that under the complex conditions of modern society he is the one who best succeeds in selecting and proportioning the objects of life, so that there results an harmonious and effective character, the energies of which work in smooth accord with the chief uplifting tendencies of his age. The gentleman-administrator can then be no other than one who, when he becomes an administrator, refuses to forget that he has still to be a gentleman. When he is placed in authority over subordinates for specific ends, and must work within definite limits of cost and administrative necessity, he does not lose sight of the fact that, as an intellectual being, he must work for the general triumph of reason; as a lover of beauty, he must contrive to increase the

sum and variety of it; and as a moral being, he owes allegiance to right in every department of his life. He is one who recognizes with joy that an organization which brings men together in intimate, permanent, daily relations, as does an industrial establishment, can accomplish, in addition to its immediate or principal object, a thousand incidental things to beautify the lives of those who are connected with it.

Of all persons, in the present economic order, to whom industry can look for leadership into a more justly proportioned life, the administrator has the greatest advantage. His tasks are more varied and broadening than those of others. By turn a commander, a courtier, an educator, a confessor, and a student; he exercises, now the perceptive faculties, and now the creative; winning at one time by clear-cut reasoning, at another by warm sympathy. As the administrator masters his art, he learns the wonderful variety of human needs and aspirations, and he comes to know that "man does not live by bread alone." The administrator's task chiefly revolves around the function of balancing plant and personnel, inasmuch as it calls upon him to select fit elements, to com-

bine them in efficient ratios, and to harmonize them in performance. His mind is drawn, therefore, to such a consideration of the fitness of means to end, and of the mutual restraint in all concurrent functioning, that he is specially prepared to address himself to the greater task of improving the relation of the various interests of life, in so far as they may be reached by economic agencies. Finally, the administrator is under a noble obligation, for his position is a conspicuous one, and it lays upon him the duty of being the first gentleman of his organization, as it is becoming that a king should be the first gentleman of his realm.

Chapter XII

THE IDEALS OF THE GENTLEMAN-ADMINISTRATOR

He whom a dream hath possessed knoweth no more of doubting,
For mist and the blowing of winds and the mouthing of words he scorns;
Not the sinuous speech of schools he hears, but a knightly shouting
And never comes darkness down yet he greeteth a million morns.

—*Shaemas O Sheel.*

THE ideal is a light which reveals a goal of effort, and invests all familiar means with a fresh significance. It is a measure which sifts men, and institutes competitions. It is a courier announcing the near arrival of a new reality. Its beauty softens the will to flexibility, its pure humanity touches the feelings, its difficulty challenges all the talents to awake. It is through the appeal of the ideal that men are aroused, instructed, and governed. We never know what a body of men can do, nor what can be made of a department of life, until the appropriate ideal appears. It was an ideal, communicated by the mouth of a prophet which aroused the sparse population of an ignored

and barren corner of the world, and caused the Arab to bestir himself, to learn his letters, to consolidate his government, to multiply his numbers, and to asemble the armies which carried his empire from India to the Pillars of Hercules. When the freshness and appeal of his vision departed, he began the slow process of shrinking back within his original boundaries.

Every department of life needs periodical renovating with new ideals, to dissolve the traditions which tend to incrust it, to lift it out of the drudgery into which it tends to sink, and to arouse energy and reunite men. No realm of human endeavor stands in greater need of the invigorating effect of a new group of ideals than does productive industry—the world of manufacturing, transporting, and trading. It is true that great things have been wrought in this field, but the original program of the industrial revolution has been pretty well worked out. At least, what remains to do is, comparatively speaking, a matter of detail, without the stimulating effect of a new conception. World trade has now been carried on for several generations; the introduction of machinery is a process over a century old; the

creation of great units has even become a menace; and the continued application of science is reasonably assured. If industry is to accomplish equally great things in the future, it will require a new program which equally appeals to the imagination.

One reason for the intellectual bareness of the outlook is the undue separation of the various departments of economic life from one another, so that we think of one world of activity as having exclusively to do with the producing of wealth, and another with the use of wealth to promote well-being. The softening influences which should be felt throughout industry, from intimate acquaintance with the process of converting wealth back into terms of opportunity and health and comfort, is lost. The spiritual import of producing is partly disguised because the process of realizing the spiritual import of wealth is not associated with it. Industry becomes the perpetual hewer of wood and drawer of water.

If the world of industry suffers from this unnatural separation, consumption is injured likewise. Where spending is most completely divorced from industry, as in the case of the idle rich and the retired rich, does it

measure up satisfactorily in the sphere of the intellect? It reveals to us, over and over again, two or three simple expedients. One is to shift the responsibility of the whole problem onto others by lump-sum gifts, another is to avoid the matter for a time by reinvesting income, and the third is to spend. This spending is for the most part equally elementary. It is a simple story of exclusions and duplications; exclusion instanced by individual parks, and galleries, and launches, and cars, and other social-consumption goods, to which an individuality is rarely given by the monopolizing owner; duplication, in several houses instead of one, forty rooms instead of twenty, over-decorated furnishings, art collections in which one piece kills the effect of the other, multiplication of automobiles, etc. One is reminded of Samuel Johnson's amusing description of the "tradesman's expanded dinner," "two roasts, two plum puddings," etc., because nothing else could be thought of. It is a record of things made larger without improvement, of things made for permanence and destroyed after a single use, of things brought from a distant environment where they harmonized and set down amid wholly

different surroundings where they are out of place.

Even in the consumption of the masses, the bad effect of separating the life of earning from the life of spending may be seen. Over against exhausted workers are those whose immunity from toil they purchase—the many idle girls and women preyed upon by the vagaries of fashion which keep them forever preening and coveting and buying. The barrenness and fatigue of the long day find their sequel in the stupid evening bill for stimulants and narcotics, which amounts to a stupendous total for the nation. The bad taste of the productive life educates a race of people who are able to tolerate the bad taste of our ostentatious restaurant and hotel life, and our tawdry amusement industries.

Divorced from the system, and science, and the habit of weighing outlay and return, which productive industry so constantly employs, consumption seems to reel and plunge as if it lacked standards and limits and clear aims. And in failing it hurts the industrial life, for if men are in industry only for a sequel, and lose respect for the sequel, what is to prevent their energies from sleeping the sleep of a purposeless life? If the

process of wealth-consumption falls into a state of stagnation, it makes a strenuous productive industry look ridiculous. It is unreasonable to expect men to cultivate heroic discipline in industry, merely to furnish the means of keeping up a process of consumption which the moral sense of their own age condemns.

One great remedy for these conditions intimately concerns the business executive. It is a program upon which he may begin at once, in his place of business, without any formality of launching a new association, and without intrusting his plan to the uncertain winds of a "general moral awakening." This plan is to stop conceiving of industry as a mere process of making money, or even as a process of producing and handling goods, and to think of it as a true cross-section of normal life, which can be made complete and healthy and efficient and honorable only by compounding it of many human elements, and making it many-sided and well balanced. Industry is more than a process, even more than an art of making good and beautiful things; it is an art of life. Its inevitable product is some sort of human character. As an art it should aspire, as all other arts

do, to simplicity, skill, obedience to form and method, to symmetry and elegance; aspire to be a recreation as well as an expending of energy, a life beautiful and pleasurable in itself, as well as disciplinary and utilitarian. A business organization should be conceived of as a real standing-together of a company of brothers to take care of each other, and enjoy a portion of their lives together.

In bringing such a point of view to bear upon his life work, the administrator should aim to utilize the equipment of his industrial organization, including its staff of experts, its administrative skill, its buildings, grounds, credit, and influence, for the increase of the happiness and welfare of all the associates, in non-economic lines not already efficiently provided for, and to the maximum consistent with the productive functions which must be carried on. Especially, perhaps, can the producing organization be used to obtain the advantage of group consumption, in those lines where the economy of joint use is great, as in the case of entertainments, baths, gymnasia, parks, etc. A producing organization which produces only something for the market, and does

nothing else avoidable, should be looked upon as an abuse of human nature.

The administrator should aim to break down the thought-tight partition which has established itself, in so many minds, between working and living; and endeavor to rediscover, for himself and his men, the art of living by the way, realizing that a great part of the really fine opportunities for spending spring out of the association of men together in earning. He should break the strain of work seasonably with recreation. He should think it right and normal if more art works get into offices than into homes or galleries, and if more stained-glass windows are put up in shops than in churches. In short, he should mix the pleasures of life in with its work, and take pains to crowd as many kinds of opportunity as possible right in democratically among the delivery men, and the machinists, and the clerks, and the traveling men.

Such a course of action on the part of the administrator will bring the process of consumption into sobering contact with the science and discipline of productive industry. Through the organized agencies necessary in the making processes, it will subject men's

actions in using wealth to the wholesome moral sense of their fellow workers. In return, industry will lose its drudgery, and become enlivened with something of the gaiety and variety and art hitherto much too exclusively monopolized by the world of consumption. New sources of energy will be developed among the workers, by making the rewards of effort more prompt, more objective, more social, more refreshing in variety and more stimulating of loyalty to the industrial organization through which they come. Men will even be able to work together more intelligently, because they will know each other on some other than the work side of character. Production, in this way, will be humanized. It will gain ends which, in realization, will not kill desire and stagnate in ennui, but will open out upon ever more attractive vistas of future possibility, and become a real programme of life. Well-being will be increased in variety, and will be distributed with greater directness, good-will, and generosity.

Industry and Art

One of the changes which must be gradually introduced into industry, if we are to

prepare the way for a fresh outburst of human spirit in it, is to increase the element of pleasure. There are parts of industry which are now fascinating to the workers. Western America glows with the enthusiasm of the conquest of nature by the mind. Our Captains of Industry, as a class, have been developed to a certain rugged heroism by the fascination of imparting discipline to great aggregations of men, equipments, and materials. Many engineering conceptions, many smoothly interlocking systems of administration, and many conserving plans of financing, have been accompanied, in the doing, with thrills of delight which have bound the performers like lovers to their tasks.

Good work and joyous work are, in the long run, the same. Wherever in industry good things have been done—wherever achievements have been characterized by vigor and largeness of plan, simplicity and directness of method, and nervous beauty and finish of detail—we may be sure that we have to do with work which has permitted the performer to experience joy, freedom, and an exulting sense of strength, while it was being accomplished. And, contrariwise, when we find the worker intelligent and joy-

ous we may expect superior results, for then the psychological conditions are right. "Tediousness," says George J. Romanes, "by the painful class of emotions which it arouses, is the most wearisome or exhausting of the influences that consume the nervous energies." On the other hand, " a prolonged flow of happy feelings does more to brace up the system for work than any other influence operating for a similar length of time." Pleasure in work produces a sympathetic, teachable mental attitude toward the task. It makes the attention involuntary, and eases the strain of attending. It stops the nervous leaks of worry. One of the secrets of lasting well is to avoid getting stale and tired and in a mental rut. Pleasure gives a sense of freedom that is a rest, as a wide road rests the driver. To know a thing thoroughly and attain mastership in it, one must be drawn back to it repeatedly by its attractions, and must find one's powers evoked and trained by its inspiration.

To introduce pleasure into work means to make of industry an art. "Real art," as William Morris says, "is the expression by man of his pleasure in labor." Instead of conceiving of the productive process simply

as the shortest road to an economic good, it plans to conserve human powers by the way, and to make labor a welcome part of life, adjusting the demands of economic efficiency to the remaining demands of civilization. To bring art into union with labor is to give increased intellectual depth to tasks, for instead of simply calculating the structural form required in an object by physical principles, the problem involves the devising of ornament which conforms to esthetic principles, and finally the harmonizing of structure and ornament.

Again, art here as elsewhere gives play to that finest of all faculties, imagination; for while the most efficient utilitarian form of an object which is to be made of a given material and to perform a given work is a comparatively definite thing, the modifications which may be made in the interest of grace, and the ornament of artistic merit which may be added, may be of infinite variety. Art, therefore, brings into employment many faculties, insuring for each faculty the relief of alternate activity, and the discipline of concurrent activity. It stimulates all the faculties with the delights of sensuous beauty and the near approach toward ideals of per-

fection. "Life without industry is guilt; industry without art is brutality."

The conditions required to bring art and labor to live harmoniously together are: to believe in the large possibilities of the thing one is doing, to have a well-grounded belief in one's powers as equal to these possibilities, to have time and an unharassed mind to master methods or find the way to the attainment of these possibilities, and, finally, to be granted the freedom and means of expressing, in the work itself, the knowledge and talent one has achieved.

The industrial administrator who endeavors to fulfill these conditions, and make his management a ministry to labor, will find that one of the first steps is to discover the possibilities of the work assigned to each person, and the scope offered by it for patience, dexterity, close reasoning, and imagination. Especially should the possibility of a fine perfection be diligently sought in those tasks which are now despised as drudgery. Drudgery is work done in darkness of spirit; it is labor shut off from intelligence. The administrator's task is to cause intelligence to shine upon the dark spots of industry, until drudgery disappears in enthusiasm

for a newly revealed perfection. The administrator should lay hold of every possible help, including the history and technique of the crafts involved, and of related crafts, and should bring to his employees treasure from his store of knowledge, as rapidly as they are able to assimilate it and put it into practice.

Another portion of the administrator's task will be, while maintaining efficiency, to allow sufficient freedom for the growth of talents. It is only when variations in design and methods of work are permitted, that men have an opportunity to think. Freedom to think must include the freedom to make mistakes, for it is only through mistakes that there can be any conception of better and worse. The daring conceptions of American engineering testify to the fact that the technical expert has been given an exceptionally free hand. The rich and varied details with which the Gothic cathedrals are embellished prove that the artisans were free spirits enjoying the confidence of the masters.

There will, of course, be many difficulties, for difficulties are a chief means of recognizing a worthy ideal. One of these is to prove, by the doing of it, that the pleasure of artis-

tic work can be made to accord with the profit of industrial work. A dictionary distinction is: "The arts are distinguished as the esthetic or fine arts, or arts of beauty, which call for the exercise of taste and imagination, and which furnish the sphere of the artist; and the useful, industrial, or mechanical arts, or arts of utility, which require chiefly manual labor or skill, and which engage the ingenuity of the artisan." Can the artist be revived in the artisan, as in the wonderful architectural and decorative work of the middle ages?

One of the several forms in which this difficulty presents itself is to overcome the impression that the understanding and practice of art requires rare talents, so that artistic activity must forever be confined to the few. On this point William Morris says:

> The art of the future will not be an esoteric mystery shared by a little band of superior beings; it will be no more hierarchical than the art of past time was, but like it will be a gift of the people to the people, a thing which everybody can understand and every one surround with love, it will be a part of every life, and a hindrance to none. * * * There is the hard business for us! To get all simple people to care about art, to get them to insist on making it part of their lives, whatever becomes of systems of commerce and labor held perfect by some of us.

Another phase of the same difficulty is to overcome the conviction that art means only the few best known fine arts, such as painting, sculpture, architecture and music. It means rather the application of a body of principles capable of being carried into a thousand fields of human endeavor. The proof of this may be found in any museum in which examples of metal work, pottery, furniture and textiles are preserved, which were made where the "wage and machine" system did not interfere with the normal exercise of human talents.

But the question must finally be faced, how can we afford to introduce art into industry? How can we, who are struggling with the high cost of living, and the cost of high living, give the workman leisure to enjoy his work and to think, and arrange for him a task broad enough to keep his powers in balance? Can modern times expect to be able to have the common products of industry again made beautiful, as they were in classical and medieval times?

The answer clearly is that, if we could simplify our requirements as much as good taste would dictate, we could afford to have our requirements conform to good taste.

This does not mean to sacrifice a great fraction of the refinements of life. It means to abandon excess and ostentation and bad art, in order to be able to afford better artistic quality in things, and in the process of producing things.

The artist as a consumer is one who has such joy in worthy material and fitting form that he is able, without sacrifice, to dispense with size, cost, unnecessary duplication, false and artificial ornament, and all other ostentatious qualities in things. He has such misery at the thought of the drudgery of those who must work blindly, and produce ugly things, that he receives no pleasure from abundance of things purchased at such cost. He acts on Ovid's advice: "Let us have more good taste than expense." It is the artistic nature, therefore, which obtains much from little, and uses the scale of pleasure and pain with the finest economy. It is the crude taste which constantly demands something new to catch its roving childish attention, and which requires superabundance to sufficiently stimulate its undeveloped perceptions. It is the individual who realizes the failure of his personal resources, who requires ostentatious qualities (cost without merit) in

goods, in order to bring his brute buying power into evidence.

It is, then, the quality of crudity in the consumer which drives the producer into drudgery. That portion of society's resources which is wasted in consumption must be made good by robbing the productive process of its rightful charms. If we could learn to know good work, and appreciate it properly, we could be happy in such simplicity that there would be abundant time and energy to make the conditions of working pleasurable, and to evoke the talents of the workers more fully, so that only good and beautiful things should be produced.

How can the consuming public be educated to that skill and discrimination in consumption called "good taste"? The answer brings us back to the original undertaking. A great part of the general debasement of taste, which is responsible for poor economy among the poor and criminal waste among the rich, is the result of the narrowing effect of a machine, division-of-labor, cash-profits kind of industry. It is dreary industry which drives men to wealth, as an end, or way of escape. But in the driving process the development of the faculties is sacrificed, so that

when the industrialist turns to use his wealth, he wastes so much that he must continue to starve his industrial life to supply his spurious needs as a consumer.

The strategic point of attack upon this vicious circle is in industry, where the captains of industry are, and where there are organizations which, with their discipline, science and technical efficiency, are able to bring the mass of men under the influence of the intelligence of the leaders. Since the workers are a great majority of the consumers, any advance accomplished by these leaders in making the productive process refining and satisfying, will revive the artistic sense of the workers, and will be felt at once in the wiser choices of consumers. If the captains of industry will enter upon a new leadership, there is a chance that the wonders of the industrial revolution may be eclipsed by the wonders of an industrial humanization.

Industry and Ethics

One of the demands of our time is to bring industry into line with the ethical advance of society. The more generally knowledge is distributed with reference to the nature and effects of our present industrial process,

the more it is felt that productive power is now so great that the claim of necessity is no longer a sufficient excuse for disregard of the moral code. Industry is no longer a moral infant; there must be free trade with the world of moral judgments.

Unselfishness of end and efficiency of means is the formula of every fine human ideal. Unselfishness is the chief impulsive power of culture, that "disinterested endeavor for man's perfection." As Matthew Arnold says,

> Culture has one great passion, the passion for sweetness and light. It has one even yet greater!—the passion for making them *prevail*. It is not satisfied till we all come to a perfect man; it knows that the sweetness and light of the few must be imperfect until the raw and unkindled masses of humanity are touched with sweetness and light.

Unselfishness has uniformly been the central virtue of the ideal conceptions of men in all ages. It showed itself in the harsh fortitude of the pagan hero, in the submission of the Greek ideal citizen, in the patriotic eloquence of the Roman orator, and in the gentle resignation of the Christian saint. It appeared upon the field of battle in the romantic honor of the knight of chivalry, and struggled against duplicity and luxury in the winning courtesy of the cour-

tier. It is today the spirit which shines in the reasonableness and fine balance of the gentleman, and flashes forth in his contempt for all that violates fair play.

The general message of ethics to this day of social differentiation, specialized aims, and division of occupations, is to avoid going astray in the multiplicity of life's interests, and of being enticed out of the main highway of life, down some by-path which leads to means and not to ends. It is to avoid any form of half-life; for ethics is whole-living. It calls, therefore, to the business administrator not to lose the fine possibilities of his industrial career, by getting lost in the making of goods or the accumulation of profits.

From generation to generation, the proportional value attaching to different virtues is altered by the changing needs of the times. Military ardor is now less necessary than in ancient civilizations. In a complicated society, promptness of decision is less needed than forethought. In a day of enormous inanimate productive agencies, thrift and industry in producing are less essential than fair play and compassion in distributing. As prosperity brings a people out from under the hand of necessity, a negative, threaten-

ing theology gives way to the attraction of splendid approaching consummations. Men learn to do fine things, not because they are scared into it, but because they want to.

As a special case of the changing ethical import of social life, industry, which has passed through amazing transformations, is having prepared for it, by the social conscience, a new ethical code. The progress of economic and sociological studies, and the devising of such instruments of precision as accounting, is giving to every one a more definite idea of the nature of social action and reaction. It is supplanting the vague pious generalizations by which we once expressed our hopes, and is putting in their place efficiency reports and sociological surveys. It is proving why certain things do not pay, and doing it with a cool and deadly certainty like the soldierly advance of a piece of mathematical reasoning toward Q. E. D. Bacteriology, for example, now makes it clear why it is a crime to produce impure milk for children. Physiological chemistry has made adulteration of products look very different than it did when it was merely a fine little trade secret. In a similar way, economic analysis is probing out the full

significance of the plan of running a business in such a way as to throw upon the public the cost of skinned natural resources, of an embittered labor policy, and of the frenzied consumption which drowns the memory of drudgery. The thing is now seen through; the tax payer is "onto the game." It is understood that a business which injures the men who are in it is trying to wind up other businesses by injuring their possible future executives, or mechanics, or stockholders, or consumers.

The large size of modern business units has transformed their internal affairs into social issues. By a simple process of multiplication of significance, it has lifted what was once conceived as technique into the realm of political economy, and what was political economy into the realm of ethics. A small employer drops a disaffected clerk, and it is a personal matter; but a great corporation confronts, in an offended official staff, an *esprit de corps* which is a consolidated power of expert opinion, able to draw down the condemnation of scientific societies. A disgruntled laborer, who is one of a dozen, communicates his secret to his wife in the evening; a thousand em-

ployees of a great concern saturate a city with opinion, and make their grievance a municipal issue.

The first step toward changing administrative methods, which was made in response to new conditions, was the private betterment or welfare work of the more far-sighted employers. The second was the publicity movement, in which business interests began to take the public into their confidence. The third step is the more definite and avowed partnership of interest, upon which the public is now insisting.

While the minister of the Gospel can reach his flock periodically, in a formal assembly where no man (of the few present) answers back, the administrator has intimate, natural, and specific daily relations with his people, about matters in which they are in dead earnest. He determines where they shall work, the persons with whom they shall associate, and the matters of which they shall think. While the minister's energy becomes the fugitive word, the administrator stamps his principles upon his customer's mind in a long remembered profit or loss, and embodies them in the materials and workmanship of the things which in the using will

daily remind the user of the point. The executive has no back-sliders nor non-contributors among his forces, and he carries on his services, not five or six hours a week, but fifty or sixty hours. The administrator at the head of a great business enterprise stands as the modern analogue of the tribal chief, who allotted estates, or of the master craftsman who preserved traditions of the art. As he advances his affairs, backed by staff, and operatives, and system, and records, and apparatus, and stock, and working-capital, he resembles a commander at the head of his troops. With such a relation to his fellow men, the administrator can no more make good the claim that his power means only business, and so get himself hidden from observation in the moral world, than a city which is set on a hill can be hid. He must in spite of himself be some kind of a "Shepherd of the People." His leadership is of many kinds rolled into one. There rests upon him the responsibility of trusteeship of his capital, leadership of his men, and statesmanship in dealing with the public interests.

One of the objections raised, when it is proposed to hold the executive to an accounting for the use of his moral power, is that

geniuses are abnormal men, with certain impulses stronger than ordinary, and certain inhibitions weaker, so that if society would have the benefits which their powers can render, it must allow their natures a certain liberty not granted to others, to work after their own fashion. What is genius? Longfellow said, "infinite painstaking"; Matthew Arnold said, "mainly an affair of energy"; Buffon said, "superior aptitude to patience"; Johnson said, "a mind of large general powers"; Ruskin said, "superior power of seeing"; a writer on military strategy says, "intuitive power of grasping things as they are"; and George Eliot said, "the capacity for receiving and improving by discipline." Where is the warrant for moral license and riot of the faculties in this? The general fallacy underlying the proposition here advanced was pulverized by John Stuart Mill in the following passage in the essay "On Liberty":

> It is not because men's desires are strong that they act ill; it is because their consciences are weak. There is no natural connection between strong impulses and a weak conscience. The natural connection is the other way. To say that one person's desires and feelings are stronger and more various than those of another, is merely to say that he has more of the raw material of human nature, and is

therefore capable, perhaps of more evil, but certainly of more good. Strong impulses are but another name for energy. Energy may be turned to bad uses; but more good may always be made of an energetic nature, than of an indolent and impassive one. Those who have most natural feeling are always those whose cultivated feelings may be made the strongest. The same strong susceptibilities which make the personal impulses vivid and powerful, are also the sources from whence are generated the most passionate love of virtue, and the sternest self-control.

Even if it be granted that allowance should be made for the vagaries of the so-called "artistic temperament," it must at once be plain that unrestrained passions and distorted views, resulting in erratic conduct, entirely unfit an individual for administrative functions. The administrator should be, in character, at the opposite end of the scale of humanity from the neurotic unbalanced type of person, for whom the phrase "artistic temperament" is sometimes indulgently used as an apology.

A second objection to the introduction of ethical considerations into business management frames itself in the oracular and wise-looking axiom, "Business is business." What does this mean? What would it mean if we said religion is religion, and politics is politics, and baseball is baseball? For one thing, it would mean that there is a technique

in each of these fields of activity peculiar to itself, and that the technique of other subjects does not apply. This is a hazardous statement; for while there is, for each organized activity, what appears to be a special technique, it is constantly being shown by experience that technical principles have a wider application than was previously realized. By this means, the realm of exclusive technique is being progressively narrowed to smaller matters of detail. To mention only one or two illustrations: the rules of motion study, which originated in business, have been applied to baseball, with revolutionary results. And, recently, the technique of the motion-picture drama has revolutionized motion study. A prominent divine has shown the significance of the principles of business efficiency for religious organizations, in a book entitled "Scientific Management in the Churches." A few years ago no one would have thought that census-office methods could concern the cost accountant, nor that the "reaction time," measured in psychological laboratories, could determine the selection of many industrial employees. The experience of scientific research is that experts tend constantly to under-estimate the

wide range of practical knowledge, and to restrict unduly the confines of their field of observation.

Again, the wise-sounding phrase, "Business is business," may be taken to mean that the ideals and larger principles of judgment of other fields of human endeavor cannot be applied in business. This is still less defensible than the assertion that there is an exclusive technique; for, as we advance from the plane of restricted and specific rules to that of general principles and ultimate standards, we leave those ideas which are based upon peculiarity of materials, or special equipment, or limitations of time and place, and have to do with the applications of the general laws of thinking and feeling to which all men, in every realm of activity, are subject. If the business executive will attentively study Machiavelli's "Prince," he will find that many of the policies of the Captains of Industry were old in Italian politics of the fifteenth century. Let him do the same with Jomini's "Art of War," or Von Clausewitz's "On War," and he will find that, by somewhat changing the phraseology, many principles of strategy may be converted into principles of business administration. And

again, if he will listen to the close reasoning upon human virtues and vices, presented in the addresses of Rev. G. Campbell Morgan, he will realize that, at bottom, the moral leader counts upon the same human forces and safeguards against the same weaknesses as does the business leader. If there is scope in business for the comprehensive use of human talents, then the moral law is there, presiding over the special technique and over the peculiar applications of principles, in the interest of an efficient general life.

The smug little phrase, "Business is business," is sometimes used by two classes of men to raise a false issue and provide an escape from duty. These classes are small, but it takes but few persons to keep in circulation a fallacy which hides a duty. One of these classes is composed of business men who wish to continue dishonorable practices, or who do not believe that they can make a success with better methods. The other class is composed of certain exponents of culture who aspire to conform to Matthew Arnold's definition of persons who "know the best that has been thought and said in the world," but who have no desire to spend

energy in the attempt to beautify industry, and therefore find it convenient to call the task hopeless. They have no "greater passion" to "kindle the masses of humanity with sweetness and light," but prefer to eat the lotus of unused learning, while "the world is in torment for the want of living thought about its present affairs." "The Christian ideal," says G. K. Chesterton, "has not been tried and found wanting. It has been found difficult and left untried." The same may be said of many cultural ideals.

The word "unselfishness" means to small natures loss, but to great ones the saving of life from inferior things so that it may be expended upon that which is better. Unselfishness brings directly many of the highest values, such as self-approval, relations of mutual confidence with one's fellow-men, and emulations and co-operations to beautify the long day of duty. It brings other gifts indirectly. There are some good things which can be reached by direct effort, but others come to us in the rebound. Those who aim at happiness rarely attain it, but those who aim at the best self-expression receive happiness as a gift, just as those who aim at kindliness attain courtesy, and those who aim at

truth attain art, and those who aim at uprightness attain power.

An Administrator's Creed

Let us set down a few items of a possible creed for a business administrator, doing so not to "lay down the law," but to stimulate a little friendly reasoning together.

I. A broader study of the art of administration should be made than heretofore. The executive should acquaint himself with the history of the different forms of the art, as it has developed in war, politics, ecclesiology, discovery, and other lines of joint endeavor; and he should draw inspiration and breadth of view from the lives of great leaders in all lines.

II. The administrator should strive in every way to ennoble the conception of his calling, mindful of the rule of art "dignify your subject." Responsibility forms the distinguishing characteristic of all professional work; recognition of it, the root of professional ethics; and pride in its discharge, a large part of the reward of professional services. The first paragraph of the American Medical Association code is: "A physician should be imbued with the greatness of his

mission, and the responsibility he habitually incurs in its discharge."

III. The hours of life devoted to industry should be made more beautiful and pleasurable. A beginning may be made in behalf of those classes which most need the cordial of joy, utilizing first of all the incidental opportunities, such as an existing vocational aspiration to distribute good reading, the presence of unused rooms and equipment to increase sociability, and the existence of joint purchasing power to improve consumption. "Men have no pleasure in the work by which they make their bread," says Ruskin, "and therefore look to wealth, as the only means of pleasure."

IV. The administrator should conceive of himself more as the leader of the men with whom he is associated, than as the trustee of the property he manages; for men are more valuable than things. He should be thought of by the men as a friend and advisor and just judge. It is a real administrative triumph to make one and the same program promote the efficiency of an industry and the welfare of its force by securing the increased efficiency as a result of a healthier and happier force.

V. The chief executive may well give special thought to his function as a representative of public interests. His neighborhood should be able to feel that any increase of his prosperity and influence will not only mean a finer policy inaugurated in his establishment, but will "benefit the town," strengthen the hands of good government, help the park and play-ground movement, and the public library, and all the general interests.

VI. The conditions of work should receive attention, not only to provide heat, light, ventilation, and sanitary features, which pay on a horse-power basis, but to insure an efficient co-operation between management and men in the support of welfare features.

VII. The beautification of the industrial environment merits special care, because of the ugliness which a century of unrestrained utilitarian construction has wrought in the world. Factory and store buildings, because of their intermediate character between public and private edifices, should partake of the internal comfort of private homes, and of the external dignity of public buildings. Particularly should the inexpensive beauty of graceful general proportions, of harmoni-

ous colors, and of landscape gardening, be availed of.

VIII. The ideal administrator will take pains to establish the fact that the aims sought in his business enterprise are joint or common ones. Spontaneous and independent thinking for the common welfare should be invited from each individual, and prized as the finest expression of the spirit of loyalty.

IX. In this age of strenuous publicity, the gentleman-administrator will scrutinize his advertisements with vigilance to make them helpful to the consumer, and truthful, and to make certain that they do not mar the beauty of any natural scene, nor exact an unnecessary toll of attention from the public.

X. The standard of duties and rewards, or the principle used in the distribution of income, should be revised by the administrator in the light of the new principles of efficiency, and of the knowledge available from psychology and ethics.

Conclusion

One of the objects toward which the industrial leader's intelligence should direct itself is to keep industry in the full perform-

ance of its functions, not only as a producer of goods, but as a school of the virtues, and as a means of joyful self-expression. The administrator should change the emphasis in his aims to accord with the progressive tendencies of the times, striving now less to acquire rapidly than to distribute justly, and thinking less of the mechanical elements of industry than of its spiritual forces. As the times call for it, he should feel himself challenged to a nicer discrimination in the use of methods, to a greater prudence in adopting plans which work well in the long run, and to a more social intuition in following individual policies which "might safely be made a law for the whole world."

Is it too difficult a task to bring modern industrial conduct into harmony with modern thinking? In this latest century of enlightenment, in the freest and richest country of the globe, must it be said of the leaders of the great industries that there is any ancient model of bravery, any principle of middle-age chivalry, any Renaissance standard of culture, or any modern gospel of service, which is too fine, too difficult, or too expensive, for them to translate into reality? Is there an ideal country toward which society

is moving, but from which the Captain of Industry must be excluded, as an "undesirable immigrant," because his estate is too small in spiritual riches?

Such a thing is impossible. The business administrator is the leader by right of ability in what the great majority have thought it most worth while to struggle for in recent generations. The aristocracy of the past sprang from industrial administrators,—landed proprietors,—who made themselves defenders of the people. The earls were jarls or strong ones, the dukes leaders, and the lords law-wards or executors of justice. The greatest patrons the arts ever had were the merchant-princes of Florence and Venice. In comparison with what an age of hand labor accomplished in the cathedrals, and with what sailing caravels did in the discovery of the new world, what can not a great modern corporation accomplish in this age of power and accounting and quick communication and easy publicity,—if it is led by men of imagination? The industrial functions now carried on by business corporations are astonishing in mass and variety. What these corporations are able to do, in the sphere of their traditionally conceived interests, re-

veals a grasp of administrative methods, an accuracy of accounts and internal reports, and a command of capital resources, which can certainly be turned to account in many new ways in enriching the lives of their members.

A great department store is able to operate carpet mills in India and lace works in Switzerland, and can, without confusion, sell anything from a paper of pins to the furnishings of a house. Is it not powerful enough to be a big brother to its young girl employees, protecting them in their distress, and pursuing their enemies to the ends of the earth?

A board of directors which can understandingly manage mines and railways and stores and factories, separated by hundreds of miles, can certainly find the point of dangerous fatigue for its men, can consume smoke and injurious gases, and can rival a German State with its benefit funds. Cannot such administrators, from the expert knowledge of their staffs, give a little timely advice to their communities on architecture, and domestic sanitation, and city planning and government? Can they not, in a thousand ways, so multiply the uses of expert talent